AIR-CARGO LOGISTICS

MBA [Logistics Management]

Paper 4.3

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SYLLABI-BOOK MAPPING TABLE

Air-Cargo Logistics

Syllabi	Mapping in Book
Unit 1 **Air Transportation in Logistics:** Significance of air transportation in Logistics: Utility created by air transportation in Logistics- Air Transportation as a means of conquering time and space- Features and facilities offered by Air Cargo- ways- Factors influencing growth in Air Logistics- Air Suitability for different Cargo - Innovative schemes/facilities to popularize air cargo-logistics in India- Share of airways in Cargo movement in India and world-wide-conventions covering the movement of dangerous goods by air.	**Unit 1:** Air Transportation in Logistics **(Pages 3-20)**
Unit 2 **Airways and Logistics Economics:** Freight Determination for Cargo in Airways - Freight levels and air-cargo elasticity- Route Scheduling- Air Cargo consolidation- Arrangements for Pooling at and distribution from airports- Technology, Cost, Speed, Security and Dynamics- Competition with other modes.	**Unit 2:** Airways and Logistics Economics **(Pages 21-40)**
Unit 3 **Range of Services:** Priority Overnight/Same day – Economy 2-5 days later- oversized freight- international and national- before and after hour service- On-Board logistics- overland transport services- Load Control, Air Cargo Loading Limitations, Cargo needing special attention in handling live animals, dangerous goods, human remains, valuables, perishables etc., Unit load devices, types, aircraft loading procedure, trimming and loading distribution, freighters and sub charters- Diplomatic mails – A, B and C categories, airline scores, mail acceptance procedures AV7, AV8 papers.	**Unit 3:** Range of Services **(Pages 41-60)**
Unit 4 **Air Cargo Documentation:** Shipper's Export Declaration, Certificate of Origin, Export license, Commercial invoice, Certificate of origin, Bill of lading, Insurance certificate, Export packing list, Import License, Consular invoice, Air way bills- Format, boxes, contents, completion of Air Waybill, mandatory information, types of Air Waybills (MAWB/HAWB) Inspection certification, dock receipt, , warehouse receipt and destination control statement- Packing, labelling and marking and various restrictions, government regulations and formalities- Shipping Bill, Electronic Data Interchange- Bill of Entry- Airline bookings procedures, conditions of contract, cancellation of shipments, communication facilities – SITA.	**Unit 4:** Air Cargo Documentation **(Pages 61-83)**
Unit 5 **Air Cargo Freight rates:** Tariff Determinants, Competition and Value of service- Chargeable weight, volume weight & dimensions, currencies and rounding off procedures- Voyage and time Charters- Major air-cargo Liners of the World- Major air- cargo crafts and their features- Charges Collect (CC) shipments, Prepaid (PP) shipments, payments (Mode), exchange rate, conversion, insurance, claims etc.	**Unit 5:** Air Cargo Freight Rates **(Pages 85-108)**
Unit 6 Intermediaries/Regulatory B in Air-cargo: Freight Forwarders: Domestic and International- Strict compliance with the law of the destination countries - Air freight forwarders association: Role and Responsibility- Domestic & Door to Door Delivery- Cargo Warehousing- Custom Clearance- Special Services -ICAO - formation, functions, IATA - formation, functions, members and other IATA bodies FIATA, ACAAI, etc., Airport Authority of India and warehousing agents- World Geography- IATA areas, airline prefix, city coding/decoding, freedoms of the air, time calculation- OAG Air Cargo Guide, TACT Rules Book and TACT Rate Books.	**Unit 6:** Intermediaries/Regulatory Framework in Air Cargo **(Pages 109-135)**

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INTRODUCTION

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Air cargo is any property carried or to be carried in an aircraft. It may comprise of air freight, air express and airmail. Cargo can be transported in a cargo aircraft, a passenger aircraft or a combi aircraft. Although more expensive than sea transport, air cargo is utilized for goods that are perishable or are required on an urgent basis.

The demand for air cargo transportation has increased significantly over the last few years, because product life cycles have shortened and demand for rapid delivery has increased. Changing business models such as Just- in-Time Manufacturing and Global out sourcing models have contributed to the rapid growth of air cargo logistics business. In such a changing business environment, where speed-to- market is a competitive imperative, movement of inventory is no longer viewed as a compartmentalized process. Rather, the sourcing of inputs, parts and components and the delivery of final product are all viewed as a continuous value-adding chain. Efficient supply chain management therefore offers significant benefits including lower inventory and intermediary costs; and simplicity in order placement, delivery and management of suppliers and customers. These benefits directly contribute to making businesses more competitive. The book will examine these aspects in detail.

This book, *Air-Cargo Logistics*, contains six units. It follows the self-instruction mode wherein each unit begins with an Introduction to the topic of the unit followed by an outline of the Unit Objectives. The detailed content is then presented in a simple and structured format interspersed with Check Your Progress questions to test the student's understanding. A detailed Summary and a set of Questions and Exercises are also provided at the end of each unit for effective recapitulation.

UNIT 1 AIR TRANSPORTATION IN LOGISTICS

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Structure

1.0 INTRODUCTION

Air transport is the fastest mode of transport for long-distance passengers and high-value light goods. As far as world trade is concerned, it is still dominated by sea transport because air transport is expensive and is also unsuitable for carrying heavy or bulky goods. However, thanks to air cargo logistics, transportation of high value, time-sensitive and perishable goods is increasingly being carried out by aircraft and warehousing services. This has resulted in the delivery of goods quickly from the point of origin to the point of consumption for satisfying the requirements of customers. Air transport also offers benefits of secure handling, speed and geographical and temporal flexibility.

Even today, air transport is mainly used for international transport and in emergency rather than in normal times. However, globally, more than one third of the value of goods traded internationally is transported by air and therefore air cargo industry is considered as a barometer of global economic health. With an increasing globalized economy, countries and companies are exporting and importing all kinds of goods from all around the world. So the importance of air transport increases and plays a very significant role in a country's economic growth. Both passenger and freight are the two backbones of air transport.

India has one of the fastest growing aviation industries in the world. Owing to economic liberalization and the emergence of a new generation of low cost airlines, air transport has contributed to the rapid growth of India's international trade in recent decades by offering a reliable and faster mode of transport services to move products and personnel services. It indicates that air transport is going to play an important role in the country's future economic development. Growth in cargo traffic in India requires significant investments in terms of construction of new airports, expansion and modernization of existing airports, improvement in connecting infrastructure and better air space management.

The aim of this unit is to provide an overview of air transportation in logistics, various factors influencing it and India's preparedness to increase its share in global air transport network and air cargo movement.

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1.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Understand air transportation and its significance in logistics
- Explain the various utility created by air transportation
- Discuss air suitability of different cargo
- Understand innovative schemes to popularise air cargo logistics in India
- Understand features and facilities of air logistics
- Discuss the role of airline hubs

1.2 SIGNIFICANCE OF AIR TRANSPORTATION IN LOGISTICS

Speed and time are important factors that are taken into account while considering air transportation for delivery of products and goods. Air transport is free from physical barriers like rivers, mountains and valleys etc. It comes handy to supply essential commodities during natural and man-made calamities: during earthquakes, flood, famine, civil or military conflicts or war, air transport is used for rescue and evacuation operations. Finally, it meets the client's requirements and timely delivery of time-sensitive and perishable goods.

Air transport, an essential part of the transport infrastructure, is a significant sector of the economy. The aviation industry is fast multiplying and stimulating further development. With the expansion of the aviation sector, numerous changes are taking place in passenger and logistics transportation. These are as follows:

- Aviation is one of the largest employment sectors creating thousands of jobs.
- With the development of infrastructure in airports, there is a growing need for maintaining adequate airport capacity for covering the growing demand for air transport.
- With increasing air traffic, there is a lot of potential for the development and handling additional transport demands.
- The market is ever expanding and the segment is able to provide numerous customized facilities to its customers.
- Charter and special delivery services are being provided for the purpose of logistics especially in goods or documents to be delivered on urgent basis.
- With the expansion of aviation industry and addition of logistics carriers in the fleets, it is possible to provide round the clock services, and low cost alternatives to meet additional transportation demands.
- Regardless of distance, flight carriers are able to provide their services to any given destination; their network is spread far and wide, beyond borders.

Check Your Progress

1. What are the important factors that are taken into account while considering air transportation for the delivery of products and goods?
2. List one change that has taken place in passenger and logistics transportation.

1.3 UTILITY CREATED BY AIR TRANSPORTATION IN LOGISTICS

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There are numerous activities in the logistics realm. Logistics creates different types of utility primarily through transportation. These are as follows:

1. **Order fulfilment:** Activities are focused on completing the orders of customers. Attached to transportation and logistics these are direct in line with the delivery of orders.
2. **Traffic and transportation:** This involves physically moving the goods from the point of origin to its destination. The destination can be the nearest airport from where the air carrier will take over.
3. **Warehousing and storage:** With numerous decisions to be taken for warehousing of goods, these decisions directly impact the transportation and logistics. There is a need to understand the number of warehouses needed, location of warehouses, the size of these and the inventory they are able to hold.
4. **Location of plant and warehouse site:** Location is all about time and place of the warehouse and customer. With the need of frequent transportation, cost becomes one of the major factors in plant and warehouse location.
5. **Materials handling:** It is essential to determine how placement of goods and movement of goods should be planned within the warehouse or other facility. This is for incoming goods as well. It is as per the movement of goods from the storage to the area where the order is to be picked up, whether it is a dock or an airport.
6. **Industrial packaging:** Transportation is directly impacting the packaging required for transit. When it is about transportation through air, there is little need for packaging or to say less layers of packaging is required. While with other modes, such as rail or water, the packaging should be sturdy that would incur more investment in packaging to ensure that goods remain safe while in transit.
7. **Purchasing:** Whatever quantities are purchased directly impact the costs of transportation. Another thing is that transportation is directly related to location or distance of the goods bought by the firm.
8. **Demand forecasting:** Forecasting is essential for the purpose of managing and controlling the inventory. This especially goes for firms practicing lean manufacturing.
9. **Inventory control:** This is related to warehousing and transportation. If transportation means are other than air, then there is a demand for higher levels of inventory and this would again require bigger capacity of warehouses.
10. **Production planning:** It should be done in coordination with logistics ensuring that there is an adequate market coverage. All these are integrated to large corporations.
11. **Parts and service support:** This depends on the transportation speed; warehouse location and forecasting the support functions that are a part of this process. All these directly impact the levels of customer services.

Materials handling: It is the movement, protection, storage and control of materials and products throughout manufacturing, warehousing, distribution, consumption and disposal.

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12. **Return goods handling:** Reverse supply is changing a lot in logistics. Often the situation demands a return of goods from final destination due to the recall of goods on the part of the client and this process involves proper disposal of goods in the right manner.
13. **Salvage and scrap disposal:** Disposal is an essential process of the reverse supply chain. In logistics, there is a huge impact of this step. Ensuring that the disposal of returned goods is facilitated in a proper manner and the goods are reusable should be handled in the right manner. Reusable goods include reusable packaging material, tin cans, reusable bottles, beer kegs, reusable pallets and the likes.
14. **Customer service levels:** Supplying the right product to the end customer is an essential part managed by the logistics including timely delivery. This includes a major part played by transportation, forecasting, inventory control, warehousing and production planning that directly impact customer satisfaction.

The two most obvious aspects of logistics are warehousing and transportation.

Warehousing: It is basically the act of storing goods that will be sold or distributed later.

1. **Warehousing:** The process of warehousing is all about storing goods that may contain semi-finished goods, raw materials and finished goods. It includes numerous facilities and locations provided by the warehouse. This is all about the logistics systems where the goods are to be stored for an amount of time, wherein the flow is interrupted or held for a time. This, however, creates additional costs to the product. When we look at the entire process in a macroeconomic sense then it is all about time utility of finished products, raw materials and industrial goods. The utility of the goods are increased due to the expansion of time availability.
2. **Transportation:** Physical movement of goods from one place to another is what transportation undertakes. The system is able to form a physical link between customers, material supplier, plants, channel members and warehouses.

When it is about choosing logistics, it is now a fact that air is the fastest means of transportation. At the same time, it is the most expensive too. However, the firm is free to choose the mode of transportation. All the steps that follow include selecting the right carrier service or transportation mode. The shipper then compares the prices as per the desired services with regard to rate or cost of services. By services it is the transit time beginning from the consignor who is readying the goods and the time for dispatch time until the arrival of the carrier delivered by the consignee. The next step involves pickup and delivery, handling the goods at the terminal and moving it between the point of origin till the terminal. Handling involves transportation of goods as per the compliance.

Apart from this, it is essential for the firm to balance the speed with the costs as per the mode of transportation. This entails minimum weight requirement, facilities of loading/unloading, rates charged as per the service, packaging, damage while in transit and special services desired or needed. If the delivery is essential then the shipper needs to utilize air freight as the means of delivering the shipment even if it is expensive. It is to be understood that time is important when it comes to shipment of goods. If this is not the case, then other cheaper transportation options may be utilized.

1.3.1 Types of Carriers

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After selecting the mode of transport, the shipper should be able to decide the legal classification or the type of carrier that they utilize; it may be private, common, regulated or on a contract basis. Let us understand all about these different types of carriers. These are:

(a) **Common carriers:** These are for the general public and the prices are kept reasonable without any discrimination. They are to serve the public without refusing to carry on any kind of goods as per the carriers' operation. Additionally, these carriers are liable for any delayed goods, damaged goods, lost goods, and so on.

(b) **Regulated carriers:** They provide safe services adequate with the facilities on a reasonable request and these are liable for damage as per the limits established by the carrier. These carriers can be motor driven or water carriers. These are subjected to less federal controls.

(c) **Contract carrier**: These carriers are for contracted customers. They are not bound to legal service obligation like common carriers to serve the public at large. However, at the same time, they provide specialized services and their rates are comparatively lower as compared to regulated or common carriers.

(d) **Exempt carriers:** These are exempted from regulations that cover services and rates. The status of exempt comes from the commodity that is hauled or the carrier's nature of operation. If these are motor carriers then these are usually local and these transport specific articles like fish, agricultural goods, livestock and newspapers. Water carriers transport in bulk comprising goods like liquids, grain, coal and ore.

(e) **Private carriers:** These are not for hire and are owned by the company or these are private carriers of the firm. Here, the transportation goes through different set of regulations other than federal regulations.

After determining the mode of transportation, there are other factors that need to be determined. These are as follows:

- Accessibility is a key factor that needs to be determined given the geographical limitations as far as the routing network is concerned.
- Availability of required facilities or provision of equipment that helps in the movement of the commodity.
- Reliable resources for transit and carrier providers that are dependable.
- Communication and convenience in relation to carriers.

A transportation firm needs to take some measures. These are as follows:

- Timely shipment of orders
- Complete shipment of orders
- Ensuring ample time for order preparation
- Ensuring product availability
- Calculating and organizing transit time
- Accurately filled orders
- Accurately billed orders

Time calculation is all about taking into perspective the end customer, the number of orders received, completing the orders and ensuring that products/goods are being sent timely.

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1.4 AIR TRANSPORTATION AS A MEANS OF CONQUERING TIME AND SPACE

For centuries, humans have been searching for the means of transportation for goods and developing rapid transportation systems for ensuring better facilities. As a result, we have now numerous means of transportation available such as cars, trains, ships and air transportation. These quickly became the means of transporting goods and passengers. Here, it is essential to notice that airlines are now one of the most essential parts of transportation that has enormously impacted lives of people.

Air transportation has been a powerful means of transportation since its inception. Numerous changes have taken place in air transportation since the Wright brothers first flew a plane in the 19th century. With the amalgamation of modern technology and the concern of time, air connectivity has become an essential link that connects countries. Situations has evolved from earlier times when there was no air transportation leading to isolation of islands and countries that were left cut off from trading on global level. However, with the beginning of air travel, things became a lot easier. Being used for passenger and then goods travel, everything became smoother. Carrying products and packages timely without much hassle is what drives the entire industry. Customers, on the other hand, are ensured that the goods will reach undamaged within the stipulated time. Covering thousands of miles without having to bother about time concern is yet another facet of air transportation. It has become instrumental in shaping up the current scenario where an online order goes through air shipping and it reaches right at the door step of the customer breaking the bonds of time and space.

Ever since its creation, airplanes have made a huge difference in the lives of people. It has become a means of communication at a faster level, for defence purposes, and has also made life easier when it comes to delivering perishable products. Several areas of human life are affected by air travel. The transportation of goods internationally, extending political relationships to different countries and establishing trade relationships have become easier. Reducing the time consumed in travel, the luxuries in air travel are undeniable and people are willing to pay the cost too. Comparatively, the time and comfort factor are lacking in other modes of transportation.

Whether it is the import of goods or export from one area to a farther destination, air travel makes it simpler. Expanding its network and reaching out to more areas/countries globally, air freight ensures that the package is delivered at the door step. Another advantage is that it has helped people in obtaining food and medical facilities to remote areas or disaster-hit areas.

International progress is to such an extent that airplanes are the primary means of extending human contact and exploring different countries that were earlier only accessible through boat or other means of transportation or at times that were inaccessible due to geographical constraints. Extending boundaries have helped people in learning about different cultures and extending business contacts to different countries.

Check Your Progress

3. List the various utilities created by air transportation in logistics.
4. What are the different types of carriers?
5. What are some of the important measures that a transportation firm needs to take?

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In the beginning, airplanes were only used for transportation of mails or airmails. Gradually, it became a source of passenger transportation. Within a span of 100 years, things began changing dramatically wherein the majority of transportation is through air.

Another thing to observe is that aviation is one of the biggest contributors in the economy and towards the community. With airlines, there are other businesses that are connected to it such as maintenance companies, restaurants, car rental companies, catering, fuel companies and taxi/bus companies. Many communities benefit when an airport is constructed in the local vicinity. Additionally, the distance covered by air transport is far more than that of any other transport.

1.5 FEATURES AND FACILITIES OFFERED BY AIR CARGO WAYS

Product distribution is all about delivering the products at the right time. While the products are delivered, the handling process too needs to be smoothly done in a way that will help the customers to access their purchase easily online. It is essential to understand that tangible products are to be analysed carefully with regards to delivery options to provide better customer service level.

In terms of product delivery, there are six modes of transportation engaged for the process of product delivery such as water, truck, digital, air, rail and pipeline. Even with these options, all these modes are not viable for marketers. There are various features of transportation logistics. These are as follows:

1. **Product Options:** This feature is related to the different products that are realistically shipped through a certain mode of transportation. For example, trucks are able to handle variety and large quantity of products easily as compared to pipelines.
2. **Speed of Delivery:** This is referred to the movement of products originating from the shippers' location right to the location of the buyer.
3. **Accessibility**: This is referred to as transportation to be suitable enough for final delivery that would occur at the desired location of buyer. It may also refer to the mode of delivery suitable to be off loaded to other modes prior to its arrival at the buyers' destination. For example, a majority of deliveries are made through air and these must be loaded into other transportation modes such as trucks, prior to the delivery of package to the final customer.
4. **Cost:** The cost is evaluated as per the terms of the cost/item to cover the distance that can be measured in miles or kilometres. Large shipments and tangible products where costs are measures per tons/mile or as per metric tons/ kilometre.
5. **Capacity:** This is related to the products being capable of shipment at one time in a given transportation unit. High capacity of transportation would mean that the cost of transportation can easily be distributed over individual products. This would lead to lower cost per transportation per individual item shipped. It is a good bargain for the shipper and for those shipping the goods.

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Intermodal: It involves two or more different modes of transport in conveying goods.

6. **Intermodal Capable:** This shipping happens when there is a collaboration between two or more modes; these can be combined as per the orders that helps in gaining advantages that each mode of transportation can offer. For example, the method of piggybacking truck trailers are deployed and then the load goes on to railroad cars. When these cars reach a given destination then the truck trailers are off loaded to a given delivery destination.

Apart from this, when a firm or a customer is under time constraints, then the need is to find the fastest means of transportation i.e. through air.

Facilities/Advantages

Air transport serves following advantages:

1. **High Speed:** Air freight is undoubtedly the fastest and the most efficient mode of transportation and this is what makes it suitable to carry goods over long distances in relatively less time. When there is an urgency in transporting the goods, then there is no other better way to do it.
2. **Quick Service:** Quick and efficient services are provided by air transport services. It is the best mode of transport when the products are perishable goods.
3. **No Infrastructure Investment:** There is less need of infrastructure as all is already planned in case of air transportation. For this reason often the prices are competitive.
4. **Easy Access:** Remote or difficult to access areas are easily reached through air transport. Where other modes of transport are not available, things become easier with air transport. Land or temperature obstruction are no longer barriers to air transport.
5. **Natural Route:** Unlike other mode of transportation where obstruction on a given route often causes delay in shipment, air transport has no such barriers. There is no definite route that an aircraft follows unlike other modes of transportation that are bound to natural route. Additionally, all the documentation and formalities are already undertaken. Lesser time is consumed for clearance.

1.6 FACTORS INFLUENCING GROWTH IN AIR LOGISTICS AND AIR SUITABILITY FOR DIFFERENT CARGO

Let us discuss the factors that influence the growth of air logistics.

Factors Affecting Freight Transportation

The following are the factors that affect the growth in air transportation.

1. **Capacity:** Often, it is all about managing to add more fleets or replacing the old one with a better one. Expansion is all about increasing capacity. For example, trucks increasing their capacity would mean that now the shippers can opt for this mode at lower costs as compared to that of air freight. This improvement may be due to upgrade in trucks. If freight volumes are down already then the

Check Your Progress

6. How have airplanes made a huge difference in the lives of people?
7. List some of the advantages of air transport.

switch to this mode is rather an easy and sensible options with greater emphasis on capacity.

2. **Fuel cost:** Even with the fuel cost down there are still chances that it may rise or to say the fluctuating fuel costs result in reduction in freight availability. This leads to fluctuations in costs and frequency of freight too decreases in number. Additionally, it may result in increase of cost.
3. **Pilots (wages and availability):** With a mix of too many freight and air transportation companies, often the biggest barrier that comes across is that of having skilled pilots to drive it through. Often aging pilots are not able to do shift times as compared to the younger lot. This leads to shortage of pilots and the industry too is not able to match the wages as per the skilled pilot when they hire a new recruit. Giving increased benefits and perks may work but not on the long run. If freight is to pay higher wages then the cost of shipment too will rise.
4. **Increased focus on safety:** Safety is the utmost concern when it comes to air transport. Investment on repairs and on logistics is always required. It should be better than surface transportation ensuring that the goods are handled by professionals and compliance related to dangerous goods is followed as per the law. The administration needs to be always on a look out for ensuring safety for all.
5. **Increased regulation:** The requirements related to the freight and forwarders revising their service hours is done by regulations authority. The productivity is greatly impacted by managing the work hours even if the issues is related to being short staffed for the moment. Training the new staff, upgrading the system and adding new software to manage things increase the costs significantly.

It is essential to note that these factors impact the way freight works for the shipment of different goods.

Air Suitability for Different Cargo

Suitability for air cargo must be assessed before products are accepted. Proper care is needed on the following aspects:

1. **Special Handling:** Special handling is needed for transportation of fragile items that are delicate with a distinct characteristic defining their packaging or form. These can be products that are liable to break or be damaged while in transit. The cargo is properly packed with special materials to form a protective layer on the product, cushioning is done to keep the goods from moving while in transit and keep it protected from shocks. Fragile articles may include ceramics, crystals, computers, dishes, TV sets, cellular phones and other such items.
2. **Perishable Goods:** These are the goods that should be kept under good conditions prior to transportation to keep them from being damaged due to temperature effect. These may include flowers, eggs, vegetables, fruits, medicines, meat, organs and fish. The cargo is analyzed for its category and for any leakage. The internal packaging should also be analysed to see whether it will be able to absorb fluids and avoid spillage while in transit.
3. **Personal Belongings:** Personal belongings are to be marked with a definite packing list that the cargo is able to perceive easily. If these are to be

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accompanied by a packing list then there should be a stamp on it with a label of the airlines. The responsibility of any loss or damage is to be covered by the airlines during the process of shipment. The goods may include excess luggage or household items. Passengers are informed about this service when they go overboard with luggage packing beyond the stipulated limit of personally carrying their cargo weight.

4. **Human Remains:** Human remains includes:
   - Cadavers: A dead human body
   - Incinerated remains: Ashes of a human body

   Often airlines may transport cadavers and incinerated remains.

   Cadavers: These should be properly and medically embalmed and packed as per the compliance in the order such as, zinc or iron metal box (hermetic), absorbent material, a wooden box (casket), cardboard, and finally a wooden crate with handles.

   Incinerated Remains: These should be within an urn container, to be stored in external packaging and the material should be properly cushioned.
5. **Valuable Goods:** Valuable goods include goods of high value such as gold, platinum, bank notes, securities, stock shares, cash, etc. These goods are transported as per commercial agreements and under stipulated agreed procedures prior to its transport.
6. **Live Animals:** Live animals may be permitted for transportation as air cargo if the following requisites are met with:
   (i) They are domesticated or otherwise non-harmful animals.
   (ii) They are kept in cages or packaging that are suitable and safe.
7. **Documentation:** If dogs are to be transported then there is a requirement of vaccination documents. Endangered species require transport certificate from the higher authorities as permitted by the law.

Dangerous Good

These are articles or substances that may pose risks to human health, safety, security, property, or the environment.

Types of Dangerous Goods

Some of the types of dangerous goods include:

- Explosives such as firecrackers, fireworks, ammunition, bullets, sparklers, etc.
- Gases such as extinguishers, camping fuel, aerosols, sprays, inhalers, lighters, oxygen bottles, compressed gases, etc.
- Flammable liquids such as adhesives, glues, acetone, paints, resins, oil products, varnishes, perfume products, etc.
- Flammable solids such as candles, metallic dusts (zinc, magnesium), lithium, sodium, activated carbon, etc.
- Oxidants and organic peroxides such as fertilizers, ammonium nitrate, chlorine, oxygen generators, etc.

- Infectious and toxic substances such as pesticides, herbicides, disinfectants, contaminated blood, infected samples, etc.
- Radioactive materials such as smoke detectors, plutonium, uranium, and any other materials that give off ionizing radiation.
- Corrosive substances such as acids, bases, mercury, ammonia, household cleaners, batteries, etc.
- Miscellaneous dangerous goods such as magnetized materials, chemistry sets, dry ice, motorcycles, vehicles, rescue materials, etc.

1.7 INNOVATIVE SCHEMES/FACILITIES TO POPULARIZE AIR CARGO LOGISTICS IN INDIA

In India, air transport commenced in the year 1911 when the airmail operation covered 10 km of area between Allahabad and Naini. Air transport was fully introduced by the British, Dutch and French in 1929-30.

The formation of Indian national airways is said to be in the year 1933 with the service between Karachi and Lahore. Just when World War II ended, a major change came in airways with services being extended to major cities like Karachi, Mumbai, Delhi, Kolkata, Lahore, and so on.

When partition took place in the year 1947, major companies came into existence such as Tata Sons Ltd./Air India, Indian National Airways, Air Services of India and Deccan Airways. With the beginning of the year 1951 four new companies came into existence: Bharat Airways, Himalayan Aviation Ltd., Airways India and the Kalinga Airlines. In the year 1953, two national corporations were formed after **nationalization** of private airline companies - they were Air India International and Indian Airlines. In 1991, after economic liberalization, private airline companies began operating in India. Today, there are numerous private airline companies in India such as Jet Airways, Spice Jet, Indigo, and so on.

Nationalization: It means the transfer of a major branch of industry or commerce from private to state ownership or control.

Historically, sea cargo has been the most dominant form of shipping cargo from and to India whereas air cargo has accounted for only a miniscule proportion of the total cargo trade with India. However, in recent times there has been a dramatic expansion. Strong macroeconomic fundamentals, growth in retail driven by rising levels of disposable income in the hands of more and more people, expansion in domestic air Network by Indian Carriers, End to End solutions by Express Service Providers, growth of new time sensitive verticals like Pharmaceuticals, Healthcare, Electronics, wireless telephony, and Automotive Spares etc. are said to be the factors responsible for the rapid growth of Domestic Air cargo logistics business. There are in all, 500 plus Air Cargo Players in the Domestic Sector with 75 at National and regional level providing direct and indirect employment of about a million on pan India basis.

Share of Airways in Cargo Movement

Air cargo represents about 10% of the airline industry's revenues. As 35% of the value of goods traded internationally is transported by air. The industry was valued at ₹ 2015 crores in 2007 – 2008. 82% of cargo transported as belly cargo in Domestic Airlines. Interline Cargo from International Line haul for Domestic Carriage grew from

Check Your Progress

8. List some of the factors that affect the growth in air transportation.
9. Why should suitability of cargo be assessed?
10. List the types of dangerous goods.

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a share of 4.78% in 2007 – 2008 to 6.55% in 2009 – 2010 of the total Domestic Air Cargo business. The size of India's express service industry in 2006 was pegged at around ₹ 7, 100 crores and in 2010 it is estimated at ₹ 10,000 crores. India's express service industry is largely fragmented with more than an estimated 2,500 entities. In terms of strength, the organised segment consisting of a few players control about two-third of the industry revenues.

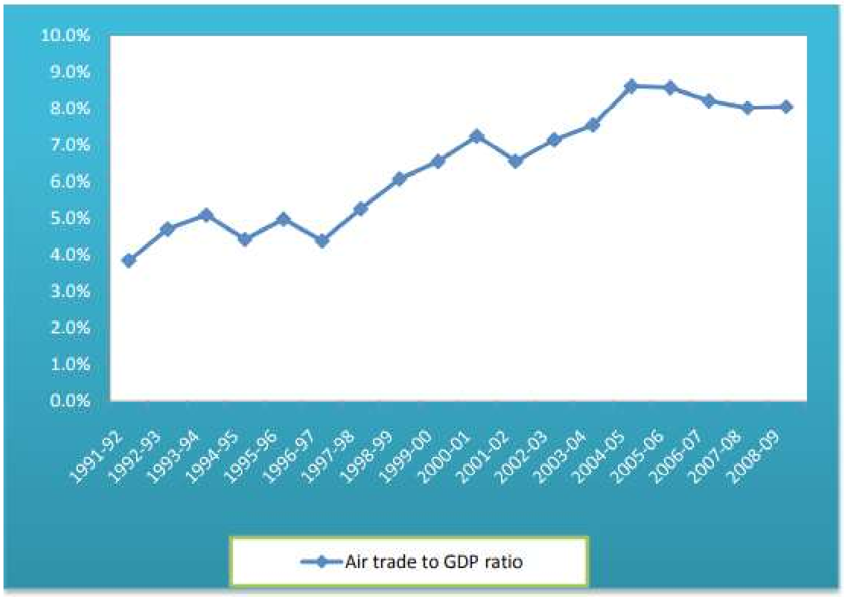


Fig 1.1 *India's Air Trade to GDP Ratio*

Let us examine some of the schemes and innovation that have helped in this expansion.

Innovation & Technology

With the amalgamation of different technologies and advanced software systems, many changes are taking place in air cargo and facilities are made available for all purposes in aviation industry. Given here are few examples to show results of collaboration of technology with aviation industry. It is not just for passengers or cargo, it is also for the purpose of defense and rescue operations in disaster-hit zones. Let us learn all about it.

Innovative Navigation System

The GPS-Aided Geo Augmented Navigation system (GAGAN) is the first SBAS (Satellite Based Augmentation System). This is one of its kind in the world due to its approach with vertical guidance operating within the Equatorial Ionospheric region. It is the third in line of SBAS that is capable of achieving this feat after the WAAS of USA and EGNOS of Europe.

Launched on 13 July, 2015, GAGAN is the result of a collaborative arrangement between the Airports Authority of India (AAI) and Indian Space Research Organization (ISRO). The following are the functions that GAGAN is capable of providing:

- Supporting direct air routes
- Reduce the fuel consumption
- Provide enhanced air safety

- Beneficial to agriculture
- Beneficial to the defense services and security agencies
- Capable of providing support in disaster and recovery management
- Aiding in search and rescue location in disaster-hit areas or zones
- Providing highly accurate data quickly

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With all these advantages that GAGAN is to serve, NCAP has come out with a mandate that declares that all aircrafts should be able to register from January 1, 2019 to be GAGAN-enabled.

Ease of Doing Business

Technology has made it easier for expanding trade and business expansion to different countries in the following ways:

- Foreign Maintenance, Repair and Overhaul or MRO/OEM or Original Equipment Manufacturers or experts are provided visas promptly.

  In Aircraft on Ground (AOG) situation
- Temporary Landing Permits are issued by Department of Industrial Policy and Promotion, Ministry of Civil Aviation.
- Foreign pilots operating an aircraft to and from India for the purpose of servicing at an Indian MRO entity are being issued.

Temporary Landing Permits contain the following conditions:

- Airport Entry Passes (AEPs) for MROs will be need based and not restricted if required conditions are met.
- Areas where aero-manufacturing takes place notified as SEZ. Fast-track clearances to global OEMs and their ancillary suppliers.

Cargo Hubs or Airline Hubs

Airline hubs or hub airports are utilized for the purpose of concentrating passengers, traffic and flight operations at a specific airport. These serve as a prime point of transfer or stop-over points that help the passengers to move on to their final destination. It is often the part of the hub-and-spoke system. An airline operates flights from several non-hub (spoke) cities to the hub airport, and passengers travelling between spoke cities are easily able to connect via the hub.

If one is to look at the system it is in contrast with the point-to-point model that does not contain hubs and/or nonstop flights are to be offered in-between spoke cities. Hub airports also serve origin and destination (O&D) traffic.

These are to be developed for and as per the infrastructure requirement at an airport for the purpose of facilitating the inter-transhipment of cargo. India has achieved a breakthrough in this facility with Delhi as the first ever pilot station to be developed as an International Cargo Hub.

Another example under development is the Multi-modal International Cargo Hub and Airport at Nagpur. This is an airport project for Dr. Babasaheb Ambedkar International Airport, Nagpur.

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Common User Domestic Cargo

Terminals Common User Domestic Cargo Terminals (CUDCT) is able to serve the purpose of handling a variety of cargo services, that too under one roof.

UDAN Scheme/Regional Connectivity Scheme (RCS) Launched in October 2016 is a scheme that is developed for the purpose of improving connectivity and development of market in the regional aviation. At the same time, it aims to provide affordable air travel to the public at large. The scheme is aimed to enhance tourism and generate employment opportunities in the country. If any airlines takes the initiative of offering air travel at subsidized rates, then they will be supported with reimbursement of concessions by both Central and State governments.

Conventions covering the movement of dangerous goods by air

The International Civil Aviation Organization's (ICAO) Technical Instructions are an internationally agreed set of provisions governing the requirements for transporting dangerous goods by air. The International Air Transport Association (IATA) publishes the Dangerous Goods Regulations in accordance with the ICAO technical instructions. Dangerous goods training is a mandatory requirement for anyone involved in the transport of dangerous goods by air.

1.8 SUMMARY

Some of the important concepts discussed in this unit are:

- Air transport is the fastest mode of transport for long-distance passengers and high-value light goods.
- As far as world trade is concerned, it is still dominated by sea transport because air transport is expensive and is also unsuitable for carrying heavy or bulky goods.
- Speed and time are important factors that are taken into account while considering air transportation for delivery of products and goods.
- Air transport is free from physical barriers like rivers, mountains and valleys etc.
- The process of warehousing is all about storing goods that may contain semi-finished goods, raw materials and finished goods. It includes numerous facilities and locations provided by the warehouse.
- After selecting the mode of transport, the shipper should be able to decide the legal classification or the type of carrier that they utilize; it may be private, common, regulated or on a contract basis.
- Air transportation has been a powerful means of transportation since its inception. Numerous changes have taken place in air transportation since the Wright brothers first flew a plane in the 19th century.
- Ever since its creation, airplanes have made a huge difference in the lives of people. It has become a means of communication at a faster level, for defence purposes, and has also made life easier when it comes to delivering perishable products.

Check Your Progress

11. When did air transport start in India?
12. What do you understand by GAGAN?
13. List the important functions of GAGAN.
14. What are cargo or airline hubs?

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- Air freight is undoubtedly the fastest and the most efficient mode of transportation and this is what makes it suitable to carry goods over long distances in relatively less time.
- Quick and efficient services are provided by air transport services. It is the best mode of transport when the products are perishable goods.
- Safety is the utmost concern when it comes to air transport. Investment on repairs and on logistics is always required. It should be better than surface transportation ensuring that the goods are handled by professionals and compliance related to dangerous goods is followed as per the law.
- Special handling is needed for transportation of fragile items that are delicate with a distinct characteristic defining their packaging or form. These can be products that are liable to break or be damaged while in transit.
- In India, air transport commenced in the year 1911 when the airmail operation covered 10 km of area between Allahabad and Naini. Air transport was fully introduced by the British, Dutch and French in 1929-30.
- Air cargo represents about 10% of the airline industry's revenues. As 35% of the value of goods traded internationally is transported by air. The industry was valued at ₹ 2015 crores in 2007 – 2008.
- The GPS-Aided Geo Augmented Navigation system (GAGAN) is the first SBAS (Satellite Based Augmentation System). This is one of its kind in the world due to its approach with vertical guidance operating within the Equatorial Ionospheric region.
- Airline hubs or hub airports are utilized for the purpose of concentrating passengers, traffic and flight operations at a specific airport. These serve as a prime point of transfer or stop-over points that help the passengers to move on to their final destination.
- The International Civil Aviation Organization's (ICAO) Technical Instructions are an internationally agreed set of provisions governing the requirements for transporting dangerous goods by air.

1.9 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Speed and time are important factors that are taken into account while considering air transportation for delivery of products and goods.
2. With the expansion of aviation industry and addition of logistics carriers in the fleets, it is possible to provide round the clock services, and low cost alternatives to meet additional transportation demands
3. Various utilities created by air transportation in logistics are:
   (i) Order fulfilment
   (ii) Traffic and transportation
   (iii) Warehousing and storage
   (iv) Location of Plant and Warehouse site
   (v) Materials handling

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(vi) Industrial packaging
(vii) Purchasing
(viii) Demand forecasting
(ix) Inventory control
(x) Production planning
(xi) Return goods handling
(xii) Customer service levels

4. The following are different types of carriers:
   (i) Common carriers
   (ii) Regulated carriers
   (iii) Contract carrier
   (iv) Exempt carriers
   (v) Water carriers transport in bulk this would comprising of goods like liquids, grain, coal and ore.
   (vi) Private carriers:
5. A transportation firm needs to take some important measures. These are as follows:
   (i) Timely shipment of orders
   (ii) Complete shipment of orders
   (iii) Ensuring ample time for order preparation
   (iv) Ensuring product availability
   (v) Calculating and organizing transit time
   (vi) Accurately filled orders
   (vii) Accurately billed orders
6. Ever since its inception, airplanes have made a huge difference in the lives of people. It has become a means of communication at a faster level, for defence purpose and made life easier when it comes to delivering perishable products.
7. Air transport serves following advantages:
   - High Speed
   - Quick Service
   - No Infrastructure Investment
   - Easy Access
   - Natural Route
8. The following are the factors that affect the growth in air transportation:
   (i) Capacity
   (ii) Fuel cost
   (iii) Pilots (wages and availability)
   (iv) Increased focus on safety
   (v) Increased regulation
9. Suitability for air cargo must be assessed when accepting products and articles which are delicate, perishable and dangerous.

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10. Some of the types of dangerous goods are:
    (i) Explosives such as firecrackers, fireworks, ammunition, bullets, sparklers, etc.
    (ii) Gases such as extinguishers, camping fuel, aerosols, sprays, inhalers, lighters, oxygen bottles, compressed gases, etc.
    (iii) Flammable liquids such as adhesives, glues, acetone, paints, resins, oil products, varnishes, perfume products, etc.
    (iv) Flammable solids such as candles, metallic dusts (zinc, magnesium), lithium, sodium, activated carbon, etc.
11. In India, air transport commenced in year 1911 when the airmail operation covered 10 km of area between Allahabad and Naini. Air transport was fully introduced by the British, Dutch and French in 1929-30.
12. The GPS-Aided Geo Augmented Navigation system (GAGAN) is the first SBAS (Satellite Based Augmentation System. This is one of its kind in the world due to its approach with vertical guidance operating within the Equatorial Ionospheric region. It is the third in line of SBAS that is capable of achieving this feat after the WAAS of USA and EGNOS of Europe.
13. The following are the functions that GAGAN is capable of providing:
    (i) Supporting direct air routes
    (ii) Reduce the fuel consumption
    (iii) Provide enhanced air safety
    (iv) Beneficial to agriculture
    (v) Beneficial to the defence services and security agencies
    (vi) Capable of providing support in disaster and recovery management
    (vii) Aiding in search and rescue location in disaster- hit areas or zones
    (viii) Providing highly accurate data quickly
14. Airline hubs or hub airports are utilized for the purpose of concentrating passengers, traffic and flight operations at a specific airport. These serve as a prime point of transfer or stop-over points that help the passengers to move on to their final destination. It is often the part of the hub-and-spoke system.

1.10 QUESTIONS AND EXERCISES

Short Answer Questions

1. Write a short note on how air transport is better than other mode of transportation services.
2. When did air transport begin in India?
3. How are shipments segregated in air freight?
4. What do you mean by dangerous and perishable goods? List them with examples.
5. What are the different kinds of carriers? Explain with examples.

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Long Answer Questions

1. Explain how technology has impacted the aviation industry.
2. What are the factors that influence the growth of air freight?
3. How has air transport brought in a positive influence on logistics?
4. How is air freight useful in transporting perishable goods?
5. Discuss India's innovative navigational system and the role of GAGAN.

UNIT 2 AIRWAYS AND LOGISTICS ECONOMICS

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Structure

2.0 INTRODUCTION

Air freight logistics is the most essential medium of dealing with cargo and comes with the responsibility of time-sensitive goods, documents, belongings, and at times, information from one destination to another. It is the same with air cargo that makes use of air transport for the purpose of shipment of goods. It is all within the process of air logistics and this process is used for the purpose of convenience and speed of goods transfer. These are the essential parts of the logistics network chain.

There are numerous airlines offering cargo services. These encompass dedicated transport lines and even commercial passenger airlines that comprise of separate divisions offering cargo services. However, the biggest challenge comes across in choosing the right service and understanding what a service offers. There are factors that determine the logistics and freight cargo, such as fragility of goods, budget, time sensitivity, economic factors, managing the cargo line and other such factors. Additionally, arrangements, distribution, speed, route scheduling, air cargo consolidation, pooling and distribution from airports are some of the key factors that determine how things work. All these determine how well the cargo is organized and managed. Another thing influencing the entire system is that of paperwork involved in the entire process. All these are taken care of by the service provider that is already working with delivery service and helps in arranging payments, custom forms, insurance and duty. When all things are taken care of unhindered and without complications, the process becomes smooth and transparent. This unit will give you an insight about how to get a better understanding with all the intrinsic details of logistics and freight management.

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2.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Understand air freight logistics
- Explain freight determination for cargo
- Discuss freight levels
- Understand air-cargo elasticity
- Understand arrangements for pooling at and distribution from airports
- Explain technology, cost, speed, security and dynamics in air cargo
- Understand air freight logistics in India and government policy initiatives

2.2 FREIGHT DETERMINATION FOR CARGO IN AIRWAYS

Due to the complex nature of the air cargo network, dynamic planning and strategy is required to manage everything timely. Issues, such as fluctuating market conditions and delivery of goods are have to be managed. Carriers that are able to manage the process effectively will be able to offer best of services. Additionally, as the responsibility is great, one needs to be familiar with the execution of the entire process. Take for example, the factors that affect the pricing of the air freight.

Major Factors

The following are some of the factors that impact the economics of freight and influence the freight determination in cargo in airways.

Freight: It refers to goods transported in bulk by truck, train, ship, or aircraft.

1. **Economic Conditions:** The direct determinant of the economics of **freight** is the economic conditions that influence the demand and supply. These are at the core of pricing decisions, regardless of industry. All this holds true for freight logistics. When the economy is booming, there is an upsurge in the demand for air freight services that often exceed capacity, leading to higher pricing. Alternatively, when time changes with economic downturns, there is a significant drop in demands. The low pricing of the carriers helps fill up the space.

   According to a study conducted by IATA in April 2015, it is estimated that there will be an expansion of the air cargo industry in the near future resulting in a significant expansion of volume. This includes trade and business expansion. At the same time, with the increased demand, prices should be adjusted accordingly along with other factors. Carriers should be ready for such situations if it arises along with economic fluctuations. Lowering prices is the first response that takes place in such situations, but other strategies too should be combined such as reducing flights, combining routes, optimizing fuel efficiency and assessing surcharge for partial loads.

2. **Regional Factors:** Regional factors are the biggest influencers of supply and demand chain as well as operating costs. Many incidents may occur, whether natural or man-made calamities, which can affect the supply and demand chain

with regard to the affected region. Adverse conditions make it difficult for the cargo to operate and with this, the supply and demand costs begin fluctuating. With uncalled-for circumstances, it becomes costlier for carriers to operate in the affected region. However, due to the adverse conditions in the calamity-hit region, carriers need to lower their prices as it becomes expensive to deliver goods through air freight. The only solution here seems that the carriers' business needs to be shifted to other sectors that would be unaffected by the unprecedented changes.

Other factors that come in play are labour strikes in a given regional office of a carrier and sudden increases in price due to increase in demand. With all this, there are statistics that come in support of regional factors that affect the carriers. For instance, there has been a growth in the Middle East route of at most 50% while other routes, such as Asia Pacific and North American are in decline. These differences have come along due to the Open Skies Agreements. According to historical data, there is a link between air service liberalization and economic gains. On the other hand, protectionist agreements that are said to depress the economic growth. The pricing strategy can be optimized by the airlines according to the historical data on the given region. This helps in identifying regions with high demand and most competition. Prices can thus be set to the changing environment and demands. Prices can be raised whenever there is an increase in demand and lowered when the prices are facing stiff competition.

3. **Operating Expenses:** Operating expenditure of air freight changes a lot and that too rapidly. Fuel prices for instance keep fluctuating. When the fuel prices are expected to remain low, for a while, this reduces the cost of operations as well. However, reduces fuel prices lower shipping rates as well. Fuel is just one of the factors that influence the operating expenses.

There are other factors too, such as landing fees, parking fees, tariffs and security measures. Additionally, environmental issues too are a growing concern on numerous other levels.

Let us look at the following factors:

(a) **Fees**: Some airports are said to levy environmental surcharges. For example, the Heathrow Airport at London proposed increasing the environmental charges with its concern towards noise pollution. These are such charges that vary to due regional differences.

(b) **Regulations**: Environmental regulations also influence operating expenses and the factor of profitability. There are some restriction aspects like flight patterns and time restrictions. These need to be complied with, and because of this, there is an impact upon the carriers' bottom line which influence other factors like fuel usage for the purpose of training.

(c) **Time and Temperature-Sensitive Cargo:** The best time saving and convenient option for shipping goods is through air cargo or air freight that helps bridge the gap created by sea freight. Due to delivery delays, any customer would want to switch on to a better and convenient option like air freight. Justifying the cost as well as delivering temperature and time-sensitive cargo with minimum hassle is what makes this option the best. Competitive advantage is something that is yet again helpful in deriving the air cargo, which helps cutting the time of delivery.

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Recently, a big initiative has been taken up by the airlines, the Electronic Air Waybill (e-AWB). This technology has helped in eliminating the need for paper documentation and the process is relatively faster. A robust cargo solution is what helps in electronic documentation and making the same available to everyone as a source of information required. It all depends on how fast air carriers are able to complete their shipments. This creates bigger differentiation between each delivery.

(d) **Premium and Value-Added Services:** The biggest advantages related to air freight is that they have the ability of providing premium services at higher prices. The pricing set by air freight is something that is based upon packing, express delivery, shipment details, tracking and goods handling. Handling of sensitive goods and timely delivery is something that is their utmost priority. They have the ability to segregate goods related to short shelf life, human remains or hazardous materials. Additionally, cargos are aware about carrying goods as per their capacity. With this, they are limited to carrying goods that often fluctuate depending on the passenger limit. However, if it is a combined carrier, they ensure that the shipments are on priority and they even offer premium services. Customers can pay accordingly to ensure that their shipments are on priority when on line or during shortfall in capacity.

(e) **Weight and Volume:** The weight and volume of the shipments are critical determinants of air freight pricing. Take for instance, a shipment that is light in weight but the volume is larger and with this, it occupies a lot of space that could have been otherwise utilized for other shipments. This significantly reduces the revenue for the flight. An affective pricing strategy needs to be implemented that would take a look at both the measurements and ensure to generate most revenue. The most essential question that airlines need to access is whether the old formula for the purpose of calculating rates based on weight and volumes is still in effect or viable. Items that are not regular in shape are bound to take more space than the actual calculated volume indicates. While all the space is not actually occupied, it can easily be used for cargo and with this, there are less loss of value.

Air freight is complex and there are many factors that need to be determined for managing transportation of goods easily. The rates set by the airlines should be competitive as well as profitable and that should be set after analyzing all the factors including the variables that impact it or causes fluctuations.

Factors Affecting Air Freight

There are numerous choices that need to be made, especially in relation to the context of air freight. However, there are many factors that influence the services and cost of air freight. These factors also influence the way air freight operate, their services, frequency and the way goods are priced. The following are some of the key factors that determines the service impact on airfreight:

(a) **Cost:** Cost is one of the most essential things that one needs to be considered. The bottom-line is that of looking at the budget. Often, airlines need to think more on terms of optimizing the budget of air freight. However, for customers, the most important thing is considering one service over another. For this, it

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becomes essential to understand the pricing factor that helps in decision-making process. Airlines charge as per weight that is referred to as chargeable weight. The charge is calculated as per the weight and size of the shipment. Another thing to understand is that the shippers may consider the destination charges. Shipping through air freight will comprise of customs and destination fees.

(b) **Speed:** Choosing air freight is better option than any other mode of shipment as it is relatively faster. Often, it is more about delivering the goods at the given time and delivery is always time-bound. With this, any time-sensitive goods are better to be delivered through air passage. Goods that have limited shelf-life too require to be delivered at the right time.

(c) **Reliability:** Reliability is perhaps the most important factor. Airlines are always on schedule, the only challenge is that of overcoming the weather fluctuations that often lead to delay in flights. Another thing that speaks for air freight is that of good connectivity between major cities that helps in keeping the delivery service smooth.

(d) **Environmental Impact:** Airlines are often called in for environmental issues that impact the public image of the company and affect the bottom-line too. It is a collective responsibility of everyone to mitigate pollution effects. Freight too comes in the category of doing their best to save the environment; CO2 emissions are higher when it comes to air transport. This causes much larger carbon footprint due to air cargo.

2.3 FREIGHT LEVELS AND AIR-CARGO ELASTICITY

Air cargo elasticity includes economic activities and social linkages between various countries and cities. It is to be understood that greater demand for air freight between different countries with larger economies and population is something that is a fact. There are many factors that affect the demand for air freight. In a growing economy, there are numerous economic activities that stimulate business demands, travels, and leisure activities. Due to increase in income there is increase in services too.

- Demand is always stimulated by lower prices whether for airfares or for expenditure on goods transportation at a given destination.
- Prices vary due to alternative destinations and this too fuels the demand for air freight.
- Other factors that affect the air freight includes distance, safety, timely delivery and events.

It is essential to understand the concept of elasticity for the purpose of understanding demand drivers. Elasticity measures the responsiveness of demand for air travel to changes in some other variable such as prices or income. A price elasticity of -0.5, for example, means that a 10% increase in price leads to a 5% reduction in the level of demand for travel. Or an income elasticity of 1.2, for example, means that a 10% increase in income leads to a 12% increase in the level of demand for travel.

There are many studies that explain the elasticity related to airlines and air travel. It all depends on the choice of the customer into selecting air freight that depends on numerous micro-level factors such as flight frequency, access to services, delays, and

Check Your Progress

1. What do you mean by air freight logistics?
2. List some of the factors that impact the economics of freight.
3. What is e-AWB? What role does it play in cargo solution?
4. Write a note on Premium and Value-Added Services of air freight.

arrival/departure times. The demand faced by a specific airline is dependent on macro-economic factors and other factors.

Definition of Elasticity

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Elasticity: It refers to the ability of an object or material to resume its normal shape after being stretched or compressed; stretchiness.

Elasticity as a concept can be defined as the stretch and return of quality to its original size and shape. Now, let us understand this as per the aviation industry. For instance, an employer is giving extra hours to their employee after work hours and they are paid extra at the month end. The extra money earned will depend on the number of extra hours he is able to put into at work. The response of the employee at this offer is what is termed as elasticity.

Elasticity can be defined as a formula as:

Em = per centage of extra money you earn/per centage of extra hours worked.

The concept is used for the purpose of measuring the rate or the amount that depends on any change.

Types and Measurement of Elasticity

These are the types of elasticity:

1. Price or Own Price Elasticity of Demand
2. Income Elasticity of Demand
3. Cross Elasticity

Price or own price elasticity of demand: This is a measure of the percentage change in the quantity demanded 'caused' by a percentage change in price.

It is to be understood that all the demand curves have negative slopes which means that the lower the price is, the higher is the quantity demanded. Often, the responsiveness differs from product to product. For instance, when there is a significant decrease in price of any goods, the demand is likely to increase. It is essential to note that according to the law of demand, it is a given fact that with changes in prices, there is a significant change in demand for goods, purchases, and this applies to the services as well. For any given business, it is essential to have all the accurate information and a clear measure of the quantity demanded that is likely to change the result of price change.

Price elasticity is calculated as the percentage (or proportional or rate) of change in quantity demanded divided by the percentage (or proportional or rate) of change in its price.

Elasticity Moves Graphically: Elasticity is measure in percentage. It is so because it gives a clear idea of comparison of changes in relation to qualitatively different things measured in two different units. This is the most logical means of deciding a big change with regard to quantity or price.

The larger the elasticity of demand, the more responsive the quantity demanded is of elasticity.

- Degrees of Elasticity
- Perfectly Elastic
- Highly Elastic

- Relatively Elastic
- Relatively Inelastic
- Highly Inelastic
- Perfectly Inelastic
- Elastic Demand

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Elastic demand happens when there is a change in quantity of demand by bigger per centage than price.

An Inelastic Demand: Demand for a good or service that does not increase or decrease in response to changes in price. Demand for goods such as fuel tends to be inelastic, since people cannot greatly change how much of these goods they consume, even if the price changes dramatically.

Elasticity in Industries

1. **Elasticity in Airline Industry:** When elasticity is in relation of airlines, there is a deep impact of elasticity of demand, policies, fiscal and monetary and other such factors or externalities. Elasticity is determined as per the market conditions. A disaster-hit area is more likely to demand more supply of goods through air passage that would significantly increase the demand while raising the cost for the airlines. With this and much more, the airline industry is often seen as unstable due to its focus on current market conditions as the market is ever changing. Availability of substitutes in adverse conditions, delivery on time and with other factors, air freight is complex with all its given conditions. Externalities continue to influence the elasticity of demand.
2. **Elasticity of Demand in Aviation Industry:** When it comes to airline industry, there are two segments of demand that is elastic and inelastic with relation to customers. The shift in prices has dramatic effects within the customer base. Negative effects are caused due to externalities that drive cost upwards while threatening the loss in demand as a result of the price sensitive customer base. However, ever since deregulation and competition in the economy, prices are kept low and there is significant cut with relation to the concerns about focussing more on customer needs. Deregulation and competition in the economy have kept prices in the industry low and have caused airlines to force cuts in areas such as wages. This leads to a growing concern of wage inequality.

2.4 ROUTE SCHEDULING: AN OVERVIEW

One of the main roles of a transport planner is to create a highly efficient schedule. This involves combining orders with routes and shifts in such a way that total costs are minimized, and all business rules and service constraints satisfied. This in essence is the concept of route scheduling.

The influence of economics and the socio-demographic structure is enormous on transportation and what is to be transported since it relates to decisions regarding the points from where the freight needs to be transported. It takes a long time to change the production within an economy. There are only limited possibilities that influence it.

Check Your Progress

5. What is air cargo elasticity?
6. What does air cargo elasticity include?

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Spatial planning, for instance, helps in reducing the need for freight transport and helps in bundling the process along with integration of freight flows in relation to transport chains. The spatial structure is influenced easily and the government attempts with regard to it are appreciated as opposed to the economic structure influence. The following are some of the examples related to spatial planning policies that affect freight transport demand:

1. **Stimulating the vertical spatial clustering among firms**: This requires encouraging the firms to locate within the same vicinity when they are a part of the same chain of logistics.
2. **Stimulating the horizontal spatial clustering of firms**: This requires encouraging companies that are a part of a same industry to locate at a given vicinity.
3. **Stimulating firms to locate near railways and waterways or along transport corridors**.
4. **Stimulating the decentralization of production facilities**: The more locations producing the same product, the shorter will be the average distance to where the product is needed.

Numerous tools can become instrumental in stimulating changes in relation to the freight transport system. These can be:

- Using building permits
- Zoning
- Providing subsidies or incentives
- Enactment of regulations.

A policy was implemented with regard to location policy in The Netherlands in the year 1989, wherein there was segregation of types of locations and company types. Companies were graded as per their shift potential or mobility profile. Locations were graded according to their accessibility with regard to public and private transport or accessibility profile. These were then further segregated into three categories:

1. Highly accessible through public transport containing major transport nodes.
2. Reasonably accessible through car or other transport.
3. Locations that were exclusively accessible through car. These locations were more close to the motorway exists and were more likely to be poor in public transport access.

The location policy was formulated in such a manner that restrictions were laid on parking places allotment. Only with relation to higher access points parking was allotted. This enabled in use of cars and legitimize restrictions related to parking facilities.

This is an organized "hub-and-spoke" spatial structure that comes as a result of urban freight distribution. It is just a way of reducing the entry of heavy vehicles that enter cities. Movement towards this specific structure can be ensured by stimulating centres allotted at borders of cities which are acting as city distribution borders.

Check Your Progress

7. What is spatial planning in route scheduling?
8. What is route scheduling?

2.5 AIR CARGO CONSOLIDATION: ARRANGEMENTS FOR POOLING AT AND DISTRIBUTION FROM AIRPORTS

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Air cargo consolidation: It refers to the service provided by a freight forwarder in which several smaller shipments are assembled and shipped together to avail of better freight rates and security of cargo.

Air cargo consolidation is all about combining multiple consignees within a single shipment. It is possible that within this model, someone's cargo may be sharing space with the cargo of the shipper on an aircraft. The shipments that the airline is carrying will be listed in a master waybill. However, a house waybill will be allotted to each individual shipment. All this is done to manage and organize cargo within consolidated arrangements. This method is ideal for those with small consignments and for saving cost of shipping.

Advantages of Air Cargo Consolidation

There are several advantages of consolidation. These are as follows:

1. The cargo will be attended with utmost detailing and a house waybill.
2. Timely execution and distribution of shipment.
3. Shipment kept in excellent condition.
4. Competitive pricing due to large network of freight forwarders.
5. Cost effective due to air consolidation of goods.

However, there is a challenge with relation to the shipping approach as the shipper would have to go through the waiting period until the plane is filled up with its optimum capacity or with full load. Additionally, air consolidations are booked during the weekends; however, during the midweek too it is available for bookings. If there is an urgent shipment that requires to be sent to its destination within a scheduled deadline, then too services are available.

Benefits of Air Freight Consolidation

1. **Efficiency**: The biggest advantage is the efficiency that it provides. This is of immense importance to customers approaching airlines or freight services. The airline would be more cost effective as the plane would be flying on full cargo load than a partial one.
2. **Lower Cost:** The cost is less expensive even if you are shipping through air. It becomes even more affordable due to consolidation.
3. **Fast:** The shipment is faster as compared to any other means of freight cargo as consolidation is faster than shipping through ocean. There is a quick turnaround time including the time when the goods are booked for shipment. The airline ensures that it arrives to its destination at the right time and through fastest route.

Why Choose Air Cargo Consolidation?

The following are some of the reasons that will speak in favour of consolidation services:

- The cargo agents are fully licensed to perform their duty of shipment.
- The service provider is already working in collaboration with commercial as well as cargo airlines that provides you with more options of transportation.

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- Transportation rates are lower when one chooses a passenger airline for shipping your goods.
- Even with midweek shipments, the consolidation services provider ensures that the cargo reaches the destination on time.
- Often, real-time tracking is available for the convenience of the client to be able to track the shipment.
- With consolidation shipping, one gets competitive rates and flexible shipping options as freight forwarding options are large.
- Attention to every shipment is possible due to small consignments.

Arrangements for Pooling

The process of optimizing services towards the airport is also essential for customers seeking services. Optimizing the entire process including working with the process and with the existing infrastructures is what is essential. It is important for pooling to be organized in a way that the clients are able to find it convenient to travel and seek services. The following are some of the ways in which the services are convenient for the client:

1. **Operational areas functional design**
   - Terminal operational areas are available and makes the security and check-in smooth.
   - The functional design of the operational services makes the process smooth.
2. **Concepts of operation**
   - Elaborated process including the baggage and passenger are well handled.
   - Optimization, evaluation and definition flows.
3. **Infrastructures dimensioning:** Dimensioning and design of terminal ancillary areas.
4. **Airport organization definition:** Identification of required roles and associated functions regarding airport processes and procedures. Definition of required skills for identified roles.
5. **Commercial and management support:** Operational Readiness and Airport Transfer (ORAT) processes support (training, tests, organization, etc.). Tenders preparation or response.

2.6 TECHNOLOGY, COST, SPEED, SECURITY AND DYNAMICS AND COMPETITION WITH OTHER MODES

It is widely acknowledge that there is a link between international trade and logistics. In a developing country like India, efficient logistics acts as catalyst by opening new market opportunities, moving of products and services while implementing speed and efficiency. Air cargo transportation has increased in demand over the recent times due to product lifecycles that are relatively shorter and thus demand rapid delivery is of utmost importance. Another thing is changes in business models which are based on time and global sourcing contributing towards rapid growth with relation to logistics

Check Your Progress

9. What do you mean by air cargo consolidation?
10. List some advantages of air cargo consolidation.
11. How is pooling essential in optimizing the services towards the airport?

business. In a changing business environment, where it is more essential to match up the speed to market and competitive imperatives with relation to inventory, the process is no more a segregated process.

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Let us try and understand how air freight compares with its principal competitor sea freight.

Air Freight Vs Sea Freight

Air freight is best used when the cost of shipping is less than 15-20% of the value of the goods. For light shipments. It is also faster, safer and more reliable than ocean, but also more expensive. Airlines also have stricter regulations when it comes to shipping hazardous materials. On the other hand, sea freight offers more capacity and value. It is usually much slower than air, and customs issues and port holdups can cause additional delays. However, expresses services increasingly available on more routes and by more forwarders, often guarantees a delivery date and is often not that much slower than air. Sea freight has a much better carbon footprint than air freight.

2.6.1 Air Cargo Logistics in India

In India, air cargo is about 10.5% of the entire airline industry's revenue. Another fact is that 35% of the value of good are traded via air. The value of goods traded via the air is often considered as the barometer of the global economic health. Another thing to understand is that fortunes related to transport and logistics industry are linked directly to the economic cycle. When there is a buoyancy in economic activity, the demand for transport and logistics services is strong. When there is a higher demand for services and goods, it all translates to more demands related to transport and logistics services.

The Indian economy is forever expanding and moving towards higher growth. According to forecasts, the growth prospects are such that they will continue to grow for two more decades. With this, it is clear to understand that there is requirement for the infrastructure facilities that should be accordingly adjusted and be able to cater to the growing needs of the trade and industry. If the opportunity is not met in a timely manner, then the costs will rise. The process continuously needs to be improved with efficiency in focus. The assessment is done through the international benchmarks that help in understanding the current state of logistics.

Air Cargo Logistics Operations

The air cargo industry comprises of the industrial supply-chain. It includes custom, brokers, air cargo terminals, ground services, domestic transportation, air cargo forwarders, integration of international express services and distribution centres. Out of these, the more essential are the air cargo terminals which are critical to the supply-chain in air cargo.

In an air cargo terminal, there are three primary users: cargo terminal operators, cargo agents/ forwarders and airlines. All these are to be seen as principal contributors to the revenue of air cargo terminals.

Cost is the determinant for air freight demand that is often priced 4 to 5 times as compared to that of road transport and 12 to 16 times that of sea transport. The values, however, vary according to different countries, changes according to season

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and product to product that too with regard to different volumes. Cargoes that are shipped via air are priced high values per unit as these are time-sensitive goods like fashion garments perishable goods, documents, production samples, pharmaceuticals, electronics consumer goods and agricultural products. There are also inputs that need to meet the emergency shipments along with just-in-time production. With the increase in air freight, there is a natural progression from passenger aircraft to that of chartered cargo planes that increases the size and for scheduling cargo services.

Stakeholders

It is essential to understand the business models related to various entities and different processes that are involved in the business of air freight. These are, however, not similar for everyone in the industry. For instance, international air cargo is more about transportation of goods through international flights for the purpose of import and export of the cargo. Domestic air cargo is all about carrying goods within domestic flights that are within the country. The cargo that is transported using the passenger flights with belly space is yet another means of transporting the air freight. This is done by dedicated freight aircraft.

Another thing to understand is that there is an upsurge in express delivery system that is fast emerging as the key product in recent times compared to general services. Express airlines operate dedicated freighters and serve the unique customer demands. They are also efficient in handling volumes.

Freight Forwarders

Freight forwarder: It refers to a company that receives and ships goods on behalf of other companies.

Forwarders play a critical role in the markets wherein foreign carriers are not much inclined towards maintaining a sales forces. Although there is already a large market that has increased presence of the cargo operators, India is yet to catch up with the process and grow its national freight forwarders.

Express Delivery Services

Globalization of business transactions and shifting to timely manufacturing along with inventory control while keeping in mind the growing industrial requirement are often the driving sources of the express delivery services. The Air Express industry worldwide is both domestic and international. The main features of the Air Express industry include: Speed of Service, Door-to-door Delivery including completion of all cross border regulatory requirements, Tracking Systems, Proof of Delivery, Security and Reliability and access to global connectivity to their customers.

Domestic Cargo

There are viable macro-economic fundamentals and retail-driven growth which are again impacted by the level of disposable income at the hands of people who are influencing the expansion of domestic carriers and other verticals including that of express delivery services/providers. All these add up towards the upsurge in the growth of domestic logistics business. If one looks at the figures, there are almost 500+ cargo players in the domestic sector with at least 75 at national and regional level that are directly and indirectly providing employment. On the national basis, the figure rises to almost a million. It is estimated that the value of the industry was Rs. 2015 crores in

2007 -2008; 82% of which was transported as belly cargo in Domestic Airlines. Interline cargo from international line haul for domestic carriage grew from a share of 4.78% in 2007- 2008 to 6.55% in 2009 -2010 of the total domestic air cargo business.

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Innovative Technologies in Aviation Logistics

With fierce competition during economic downturns, factors like fuel costs keep the aviation industry in doldrums. Meeting the demands of the growing customer demand, airfreight companies are always looking for ways to enhance their performance and client base. Many airlines are looking for ways to add new categories and means of better transportation services with regard to specific goods categories at competitive pricing.

It is to be understood that airfreight plays an essential role in international trade. With the growing labour division and increase in international economic and cultural connections, the global economy is becoming significant these days. Aviation logistics plays an important role with regard to global logistics system that is on par with different types of transport. Airfreight services are firmly established especially when it comes to production chain of transport companies. The primary driver of the development in this field is globalization trend which is a catalyst in creating demands for fast, secure and reliable air transport.

The functionality of airfreight is deep rooted. Nonetheless, it is facing fierce competition with regard to airlines and other transportation services. The competition becomes further complex as with the complicated economic situation, explosive growth with regard to fuel costs and growing demands of customers, force airfreight companies to enhance their efficiency, lowering their costs and expanding client base. Many airlines are moving towards adding specializations, focusing more on transportation with relation to specific categories and for diversifying their portfolio of services. Airlines are pressured to create multiple market niches that will serve as the best possible means of attracting customers. This would also include planning specialized freight.

Individual Approach to Unique Cargoes

When it comes to airfreight, there is a need for specialized technology. Let us understand more about it. The role of air cargo is crucial to the economic development and for the growth of our country. As a specialized sector, it requires development and focus on issues that are directly affecting it. As an integral part of routine life, it is an understood fact that the shipment of high-value goods is time-sensitive and temperature controlled. The products could be anything from electronics to live animals or perishables. It is essential to be efficient with the end-to-end supply-chain. It has a wide range of service providers who are collectively working towards providing efficient and faster delivery. The air cargo ecosystem and the express delivery and are expanding towards e-commerce.

IATA Report

Let us have a look at what IATA has to say about airlines growth and logistics.

- According to a report submitted by IATA, the annual growth with regard to the global air Freight Tonne Kilometres (FTKs) accelerated to 6.1 per cent each year in September 2016. It is the fastest since the 2015 US west coast disruption.

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Open Sky Policy: It refers to an international policy concept that calls for the liberalization of the rules and regulations of the international aviation industry–especially commercial aviation–in order to create a free-market environment for the airline industry.

Comparing it with European and Asia Pacific airlines, both registered strong growth with 12.6 per cent and 5.5 per cent each year and accounted for more than 80 % of the annual increase in industry-wide FTKs.

- The markets that are readily emerging with regions that are delivering fastest growth in airfreight volumes are expected to grow more in the coming five years. However, all this is estimated to be led by the Middle East and Africa.
- In India, the adoption of **Open Sky Policy** by the government of India as per the report of 1990s where Indian or foreign carriers are given the freedom to operate scheduled and non-scheduled cargo services to and from airports has surely resulted in strong upsurge in international air cargo movement. However, it is still low as compared to other leading countries.
- As per the AAI report, the international and domestic freight traffic have shown growth of 8.1 per cent and 7 per cent, respectively, resulting into overall increase of 7.7 per cent in total freight traffic during the period (April-September) 2016-17 as compared to (April-September) 2015-16.

Challenges & Opportunities

With the open economy, airlines are taking entry into new routes. Reforms related to government policies and advancement in technology are helping Indian air cargo to grow exponentially. However, the cargo sector is fragmented and there is still need of professional implementation within the system.

There are visible challenges when it comes to air cargo in India with its concentrated few airports that have insufficient facilities especially when it comes to smaller airports. The challenge is with forming connectivity of cargo volumes in Tier 2 & 3 cities with major cities for air transportation. All this needs expanded supply-chain to these cities wherein there is a need to combat cargo volumes which are necessary to integrate the entire infrastructure for air cargo facilities. The best possible way to do so is by dedicating unused infrastructure at the airports to airfreight operators.

Recent Developments

India is fast emerging as an important market in airfreight. This is becuase India is becoming a market that is open to international carriers that are operational currently and many more are planning to foray. Air cargo is expanding beyond the inbound freight that is becoming less in filling up aircraft and, more than ever, aircrafts are filling up one way that is export. Due to competition, export rates are going down. Hence airlines are stuck with immense competition and are finding it difficult to make a profit with relation to keeping India on their route. There are many airlines that are coming in the Indian market and with this, there is a significant cut down in the capacity.

Even with numerous challenges, there are many opportunities in the cargo industry in India which is all set to promote domestic and international trade. This is the time when there needs to be significant investment in infrastructure development. The investment can be utilized for the purpose of developing dedicated cargo terminals, airfreight stations and off airport common user facilities for handling cargo within the country. Apart from developing infrastructure, the technology development with system advancements and secure systems need to be put through.

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According to FICCI-KPMG 'India Aviation Report 2016', there is a vital role performed by airfreight for increasing cargo throughout the country. Some of takeaways are as follows:

1. A policy is required for the purpose of allotment of dedicated facilities at airports that will be especially made for cargo aircrafts.
2. Restriction related to night operations and high lease rentals. This surely makes air cargo operations costly.
3. Policy support is required along with robust infrastructure that ensures freight operations are efficient within the country.
4. There should be dedicated cargo airports. They need to be developed for ensuring that the cargo is to get priority.
5. Peak operation times need to be defined for the purpose of being efficient in cargo delivery even during night hours.
6. Connectivity with transport and infrastructure can be close to industrial areas to fulfil the need of critical customer base.

Despite all these, Indian airports are at a geographical advantage with regard to suitable location as they are able to serve as a hub for different intercontinental routes such as Europe-Australia and East Asia. The only challenge is that of exploring the advantage to its optimum level. It is still an advantage as it will help impede intercontinental traffic. When the transhipment hubs are developed, there would be further enhancement within to drive airfreight that will be able to cater to the fast growing intercontinental traffic. With regard to the same system, there is a need of having a standard within the entire system.

There is a growing need for adequate infrastructure that would help optimize service standards and operation hours that will be maintained at every stage of supply-chain. These are the parameters to airport facilitation that need to be checked upon. Facilities need to be improved along with coordination and the standards that need to be maintained with supply-chain. Logistics requires faster, efficient and reliable services during processing cargo consignments. If we look at other modes of transport, huge competition exists. It is essential to improve every logistic player for the purpose of improving individual performance and for developing participative attitude. It is all about working together.

Government Initiatives

The Indian government is taking two major initiatives for propelling airfreight: The formation of Air Cargo Logistics Promotion Board (ACLPB) and AAI Cargo Logistics & Allied Services (AAICLAS). The aim is focused on provision of an ecosystem for the purpose of harmonizing growth with regard to various aviation sub-sectors, such as cargo, skill development, airlines and aerospace manufacturing. For the purpose of promoting domestic as well as international air cargo and express delivery operations, ACLPB was constituted in the year 2016 under the National Civil Aviation Policy. There is a need of putting in place a framework that ensures growth in the business of airfreight. The committee constituted for the purpose is to ensure its growth through implementation of cost reduction, efficiency improvement and for better coordination within the ministries.

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With the purpose of becoming an integrated logistics network, India is now primarily focusing on handling airfreight. The Airports Authority of India (AAI) has launched its subsidiary that is all geared to develop a distinct organizational structure and a new business model to help the organization. With different departments emerging, there will be a functioning of three verticals. These are as follows:

- Air cargo handling and allied services
- Warehousing and contract logistics
- Air cargo road feeder and air freight stations.

E-Ticket to Life

With changing times, there is a need for changing the industry as a whole. The key direction is that of implementing standard for e-document transfer and management. However, this is working in passenger air travel already. There is a growing need for e-freight standard that is developed by IATA. However, it is at present implemented in Russia by the ministry. Testing is going on for the purpose of realizing its transit and transfer freight routes.

Switching electronic documents along with the management of airfreight movements is going to be beneficial for the industry. When it comes to passenger flights things are managed with one e-ticket. On the other hand, freight operators are burdened with complicated documentation. Implementing the new system in cargo would eliminate the need to prepare 20 separate paper documents as per the estimate of IATA. The transition from electronic format should be able to save the industry around $4.9 billion every year.

IATA's plans are designed to make changes with cent per cent of transport being moved on to using e-freight system. The transition should be able to shorten the shipping costs and reduce losses. One should be able to see dramatic changes such as improved punctuality issues, services and information which are available to the client. Thus, the level of services will be improved as the number of errors will be reduced. Therefore, it becomes essential to master electronic technology that will make the process modern and change the entire logistics chain.

The e-Freight programme includes the following features:

1. Airlines
2. Freight Agents
3. Ground Services Companies
4. Customs Bodies

The goal of the program is to minimize the expenses which are incurred in paper documentation by as much as 80%. This should be able to result in an efficient e-freight system that will also improve oversight would improve. When the information is accessible, it becomes possible to assess the risk factors, focusing on the resources and making decisions prior to cargo that is transported to the airport.

Electronic data is easy for managing profile, analyzing trends with the given movement of import and export freight. Additionally, it helps control payment of fees. The primary source becomes easy, data entry is correct and the mistakes are lowered. Electronic information thus helps facilitate the control of freight movement in real life.

Check Your Progress

12. List the primary users at the air cargo terminal.
13. What does the IATA report say about the annual growth of global air freight?
14. What are the Indian government's initiatives for propelling the air freight?
15. List some features which are included in e-freight programme.

2.7 SUMMARY

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Some of the important concepts discussed in this unit are:

- There are numerous airlines offering cargo services. In addition to dedicated transport lines, even commercial passenger airlines that comprise of separate divisions offer cargo services.
- Due to the complex nature of the air cargo network, dynamic planning and strategy is required to manage everything timely. Issues, such as fluctuating market conditions and delivery of goods are have to be managed.
- The direct determinant of the economics of freight is the economic conditions that influence the demand and supply. These are at the core of pricing decisions, regardless of industry.
- Environmental regulations also influence operating expenses and the factor of profitability. There are some restriction aspects like flight patterns and time restrictions.
- The biggest advantages related to air freight is that they have the ability of providing premium services at higher prices.
- There are many factors that affect the demand for air freight. In a growing economy, there are numerous economic activities that stimulate business demands, travels, and leisure activities. Due to increase in income there is increase in services too.
- These are the types of elasticity:
    1. Price or Own Price Elasticity of Demand
    2. Income Elasticity of Demand
    3. Cross Elasticity
- Price or own price elasticity of demand: This is a measure of the percentage change in the quantity demanded ‘caused’ by a percentage change in price.
- Elasticity is measure in percentage. It is so because it gives a clear idea of comparison of changes in relation to qualitatively different things measured in two different units.
- One of the main roles of a transport planner is to create a highly efficient schedule. This involves combining orders with routes and shifts in such a way that total costs are minimized, and all business rules and service constraints satisfied. This in essence is the concept of route scheduling.
- Air cargo consolidation is all about combining multiple consignees within a single shipment. It is possible that within this model, someone’s cargo may be sharing space with the cargo of the shipper on an aircraft.
- The biggest advantage of air freight is the efficiency that it provides. This is of immense importance to customers approaching airlines or freight services.
- The cost is less expensive even if you are shipping through air. It becomes even more affordable due to consolidation.
- In India, air cargo is about 10.5% of the entire airline industry’s revenue. Another

fact is that 35% of the value of good are traded via air.

- The value of goods traded via the air is often considered as the barometer of the global economic health.
- It is widely acknowledge that there is a link between international trade and logistics. In a developing country like India, efficient logistics acts as catalyst by opening new market opportunities, moving of products and services while implementing speed and efficiency.
- The air cargo industry comprises of the industrial supply-chain. It includes custom, brokers, air cargo terminals, ground services, domestic transportation, air cargo forwarders, integration of international express services and distribution centres.
- According to a report submitted by IATA, the annual growth with regard to the global air Freight Tonne Kilometres (FTKs) accelerated to 6.1 per cent each year in September 2016.
- The Indian government is taking two major initiatives for propelling airfreight: The formation of Air Cargo Logistics Promotion Board (ACLPB) and AAI Cargo Logistics & Allied Services (AAICLAS).

2.8 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Air freight logistics is the most essential medium of dealing with the cargo and it is something that comes with the responsibility of time-sensitive goods, documents, belongings and at times information from one destination to another.
2. Some of the factors that impact the economics of freight and influence the freight determination in cargo in airways are:
   (i) Economic Conditions
   (ii) Regional Factors
   (iii) Operating Expenses
   (iv) Time and Temperature-Sensitive Cargo
   (v) Weight and Volume and other factors
3. Recently, a big initiative has been taken up by the airlines, the Electronic Air Waybill (e-AWB). This technology has helped in eliminating the need for paper documentation and the process is relatively faster.
4. The biggest advantages related to air freight is that they have the ability of providing premium services at higher prices. The pricing set by air freight is something that is based upon packing, express delivery, shipment details, tracking and goods handling. They have the ability to segregate goods related to short shelf life, human remains or hazardous materials.
5. These are the types of elasticity:
   - Price or Own Price Elasticity of Demand
   - Income Elasticity of Demand
   - Cross Elasticity
6. Air cargo elasticity include economic activities and social linkages between various countries and cities. It is to be understood that greater demand for air freight

between different countries with larger economies and population is something that is a fact. The concept is used for the purpose of measuring the rate or the amount that depends on any change.

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7. Spatial planning helps in reducing the need for freight transport and helps in bundling process along with integration of freight flows with relation to transport chains.
8. One of the main roles of a transport planner is to create a highly efficient schedule. This involves combining orders with routes and shifts in such a way that total costs are minimized, and all business rules and service constraints satisfied. This in essence is the concept of route scheduling.
9. Air cargo consolidation is all about combining multiple consignees within a single shipment. It is possible that within this model, someone's cargo may be sharing space with the cargo of the shipper on an air craft.
10. There are several advantages of consolidation. These are as follows:
    - (i) Your cargo will be attended with utmost detailing and a house waybill.
    - (ii) Timely execution and distribution of shipment.
    - (iii) Shipment kept in excellent condition.
    - (iv) Competitive pricing due to large network of freight forwarders.
    - (v) Cost effective due to air consolidation of goods.
11. The process of optimizing the services towards the airport is also essential for customers seeking services. Optimizing the entire process including working with the process and with the existing infrastructures is what is essential. It becomes essential for pooling to be organized in a way that the clients are able to find it convenient to travel and seek services.
12. There are three primary users: cargo terminal operators, cargo agents/forwarders and airlines. All these are to be seen as principal contributors to the revenue of air cargo terminals.
13. According to a report submitted by IATA, the annual growth with regard to the global air Freight Tonne Kilometres (FTKs) accelerated to 6.1 per cent each year in September 2016. It is noted to be the fastest ever since 2015 US west coast disruption.
14. The Indian government is taking two major initiatives for propelling the airfreight, this would be: The formation of Air Cargo Logistics Promotion Board (ACLPB) and AAI Cargo Logistics & Allied Services (AAICLAS). The aim is focused on provision of an ecosystem for the purpose of harmonizing growth with regard to various aviation sub-sectors, such as cargo, skill development, airlines and aerospace manufacturing.
15. The e-freight programme includes the following features:
    - (i) Airlines
    - (ii) Freight Agents
    - (iii) Ground Services Companies
    - (iv) Customs Bodies

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2.9 QUESTIONS AND EXERCISES

Short Answer Questions

1. How does the fluctuations in prices effect demand and supply-chain in logistics or aviation industry?
2. Why are regional factors said to affect supply and demand chain?
3. How is temperature and time-sensitive cargo handled in airfreight?
4. Define pooling and discuss its role in cargo solution
5. How will airfreight benefit more from the consolidation of services?

Long Answer Questions

1. Explain all about operating expenditure and factor influencing Air Freight Logistics.
2. What are the factors that affect airfreight? Explain in detail.
3. What is air cargo elasticity and what are the influencers behind it?
4. What is route scheduling and how is everything managed in it?
5. What is airfreight consolidation and why is it beneficial?

UNIT 3 RANGE OF SERVICES

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Structure

3.0 INTRODUCTION

Even though the aviation industry is driven by many factors, freight is not growing as per expectations. This segment is still a small part of air traffic. A majority of the carriers view it as a secondary activity. Although there are specialized cargo airlines, some of them are not well-equipped to handle the cargo.

Some passenger airlines are overcoming the cargo demand through the practice of belly cargo, something that is highly lucrative for them. It is estimated that 50% cargo is moved through this means. It is working to the point that the demand for dedicated cargo aircraft is declining. Ever since the 1990s, cargo has been a solid player in the industry. However, with other catalysts and growth in the sector, there are many players in the market and it is rapidly affecting the changes in practices. In the year 1992, FedEx began by sending software to its customers for the purpose of enabling its clients to track their shipments without having to manually do so.

With technological changes during the recent years, the trend is such that there is an increase in reliability and accessibility in the cargo industry. Most of the airlines offer real time flight status with flight and booking options including that of tracking facility. Additionally, the industry is fast adopting electronic procedures that include electronic air waybill that helps reduce the humongous paperwork related to freight. This also helps in increasing security and safety of transportation.

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It is expected that in the future, there will be a rise in cargo with 15-20 tonnes of airfreight being worth 30-40 economy passenger seats. It is related to the scenario where both are on passenger planes. However, to understand all about the operations and the way airfreight works, it is essential to understand all about cargo.

This unit aims at helping you learn about facts related to cargo handling, limitations, loading procedure, devices and mail handling procedures.

3.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Understand range of services to deliver freight
- Discuss the priority services to keep the cargo moving
- Describe on-board logistics and overland transport services
- Discuss load control and air cargo limitation
- Explain the role of unit load devices and their types
- Know about airline scores, mail acceptance procedures, AV7, AV8 papers

3.2 PRIORITY OVERNIGHT/SAME DAY

Let us begin by discussing priority overnight.

3.2.1 Priority Overnight

Airlines often come up with freight centres, schedules and routes along with their expertise to keep the cargo moving at the optimum speed regardless of what goods are being shipped. The goods can contain critical supplies, perishable items or even seafood. It is easier these days to ship any kind of goods to its destination given the rising number of freight operators. Air freight companies offer priority overnight services for goods. It essentially means that the goods will be delivered the next day.

The most essential thing to understand is that when it comes to airfreight, the best that cargo transport do is to schedule time-sensitive shipments and make arrangements for its delivery time. They calculate the destination time it would take to reach guarantees so that the shipment will reach on time. Some airlines come up with turn-around-time that includes 12-48 hours of shipping goods. However, delivery time more often than not depends on place of origin and the destination.

Many airlines offer variety of priority services that depend on the goods to be shipped. They may be providing reserved priority services for perishable shipments. Priority may be given to temperature-sensitive shipments, such as fishes, foodstuffs, dairy products, vegetables, fruits or flowers.

With the advent of e-booking facility, it has become possible to book a priority shipment online offered by some selected airlines. The client is able to even get the estimate of the waybill which makes it easier to manage the goods that need to be delivered as per their own budget. Another advantage of online service is that priority goods are often accepted 2 hours prior to scheduled departure of aircraft. However,

there may be exceptions to it. Airlines have priority to dangerous good and shipment that vary with different air carriers.

3.2.2 Same Day Emergency Pickup and Delivery

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Often, some goods are time-sensitive and they require timely delivery especially when it comes to goods that are mission critical and require international shipments. Airlines offer airfreight for immediate pickup and door-to-door delivery with the shortest timeframe possible. This is referred to as same day delivery services. Flexible services or same day delivery services help in delivering emergency shipments. These are often categorized into emergency pickup and delivery.

Advantages

The following are the advantages when client chooses same day delivery:

1. Next day delivery with the latest flight available including door-to-door delivery to any given global destination.
2. Scheduling shortest possible time for goods delivery.
3. Flexible arrangements for emergency shipments.
4. Fulfilling B2B or business to business needs.
5. Dedicated support on-desk and shipment handling.
6. Global coverage with regard to specific countries.
7. Regional coverage too available to specific countries.

Economy shipping

This service is utilized by customers when one need to move a large shipment overseas cheaply in a short space of time. It usually takes 2-5 days or 4-6 business days for delivery to reach the customer.

Overland transport services

Most air freight services such as FedEx also offer overland transport services between following and/or preceding sea transport of goods and/or containers. The most commonly used overland transport in India is shipment by trucks, followed by shipment by the Indian railways.

3.3 AIR CARGO LOADING LIMITATIONS: CARGO NEEDING SPECIAL ATTENTION IN HANDLING LIVE ANIMALS, DANGEROUS GOODS, HUMAN REMAINS, VALUABLES, PERISHABLES, ETC.

Airfreight is one of the most desired cargo services. Often the service is used for the purpose of shipping high value items. However, manufacturers often utilize this service for the purpose of time-sensitive components and for distributing of products that are high in demand or for new products that should be launched. However, it is not always that all the goods are transported in one go as there are restrictions related to size and weight of the goods that are to be carried. With this there comes a list of prohibited

Check Your Progress

1. Since when has cargo been a solid player in the aviation industry?
2. To who does an airline freight company provide priority services to?
3. List one advantage of same day delivery.

items. Another important thing is packaging, which along with weight-based pricing, is important.

3.3.1 Air Freight Options

NOTES

Shippers need to take advantage of airfreight. They often opt for affordable options. Consolidated freight is what most of the clients opt for. The service combines shipment with other goods that make it a cost-effective load and the rates become better with economy of scale as offered by an airline.

Airlines need to manage loads together and they need time to manage loads. For this reason consolidated freight handling becomes a better option. Their operation is once or twice a week, that too with regard to prime destinations. The transit time is that of 5-7 days. However, it all depends on freight to freight; some may schedule the plane on such a level that they may provide back-to-back or direct services. Often, the service is available on next available flight to its destination.

Often, the client decides to pay considerable prices to arrange for charter services to a freight plane. This is done by businessmen who cannot afford to lose even a few hours with delivery of goods or documents. The amount in these cases is paid in advance, cancellation charges are steep and the customer needs to pay for the round trip.

At some routes, clients can take the advantage of backhaul flights with better rates to special routes. Then there are options like next flight out services. These, however, are limited to baggage-based check-in of the package that is extremely urgent. Other facilities that airfreight may offer can include, but not limited to collection, customs clearance and cater to special cargo requirements.

3.3.2 Pricing of Air Freight

With the cost of carrying surplus load on aircraft increases as per each kilo added, the weight becomes the primary factor that decides the freight charges or rates. Another thing to note is whether the weight is surplus then the pricing too increases as it is oversized. This weight-based charges are applied by freight forwarders. However, other couriers charge extra with each individual item added and accounted for.

If your goods are not completely fill or near-fill, then you will be charged for ***Unit Load Devices (ULDs)*** that fit the front hold, thus one is offered best rates as per this situation. Other means of pricing comprise consolidation wherein direct consignments are subjected to the Air Cargo Tariff (TACT). These are common carrier rates that are normally applied by a majority of the airlines.

Unit Load Device: It is a pallet or container used to load luggage, freight, and mail on wide-body aircraft and specific narrow-body aircraft.

3.3.3 Prohibited Items for Air Freight

Items that are restricted to be carried on air freight may be items that may endanger the aircraft or to passengers' safety or health or may cause damage to property. The following are these categories:

(i) **Explosives**: Fireworks and firecrackers, detonating fuses.

(ii) **Gases**: These are compressed gas, fire extinguisher, lamp bulbs, explosive automotive airbags, dry ice, gas cartridge, gas cylinder, automotive airbag, gas lighter and aerosol.

(iii) **Flammable liquid**: These include camphor oil, thinner, engine starting fluid, gasoline, perfume, paint, turpentine, air freshener, engine oil, alcohol, insect sprays, camphor oil, and other inflammable objects, such as flammable solid, pyrophoric substances, and substances that discharge flammable gases when it comes in contact with water such as copra, rubber debris, dry white phosphorus, activated carbon, castor products, magnesium powder, safety matches, titanium powder, solid gum, magnesium powder and other such materials.

(iv) **Toxic and infectious items**: Pesticides, lithium batteries.

(v) **Corrosive items**: Batteries, alkaline battery electrolyte.

(vi) **Magnetic substances without degaussing packaging, magnetic steel and other strong magnetic products**, **Currency detectors, speakers, magnets.**

(vii) **Items dangerous to public health**: Corpses & bones (inc. incinerated), hides that are not tanned, animal bones unprocessed with chemicals.

(viii) **Oxidizers, organic peroxides, radioactive materials & corrosive items**: Chemical medicines, lab chemicals (potassium permanganate, sulphuric acid).

(ix) Powder, liquids, pastes, and other items that contain danger signs printed on their packaging.

(x) **Biochemical products and all the material that may be infectious in all kinds**: Bacillus anthracis, dangerous pathogens, medical wastes.

There are other restrictions that apply depending on the national laws as well as regulations of specific airlines. For instance, ever since the real-life incident of discovering bombs on the UK flight in the year 2010, there has been ban on the carriage of printer cartridges which are not approved through shippers. If one were to send personal or household items in a crate, then it would go through full packing list.

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3.3.4 Packaging Your Items

Airfreight companies are aware that the items they are carrying are urgent, temperature and time- sensitive or perishable and there is a need of careful handling of these objects, especially when these are packed. There are regulations and issues related to different goods. These are as follows:

- Perishables are to be packed prior to 24 hours of travel without spoilage; special care is taken while packing. Styrofoam boxes are overwrapped for extra safety.
- Flexing is avoided for goods that are wider or longer than 213 cm. For the same reason, goods are tested for sagging when picked up. Longer ends are protected that make the handling easier.

Each airfreight has different measures as per weight and size of consignment and even for fibreboard box. Often, most of the flights prefer fireboard. Voids in the boxes are filled by packing material, board and surplus paper which are called dunnage or loose fill cushioning. This is done to avoid the load from moving and getting damaged during transit. This shows that the freight takes utmost care of the goods that are to be carried. It is not just the transportation, but also the way the goods are packaged which ensures safety of the goods.

Check Your Progress

4. Why do customers opt for consolidated freight?
5. List some of the prohibited items for airfreight.

3.4 AIRCRAFT LOADING, LOADING CONTROL, LOADING PROCEDURE, TRIMMING AND LOADING DISTRIBUTION

NOTES

Let us begin by studying the loading of aircraft with cargo.

3.4.1 Loading of Aircraft with Cargo

It is for the safety of the airplane that all the cargo and baggage to be loaded has to be weighed. This weighing should be an accurate estimate of the weight using standard values. At the same time, it should also be secured for preventing movement in flight. Loading should be in line with the applicable regulations and limitations of the airfreight and aligned with the operating loading procedures. This should be in accordance with the instructions of the management that has all the responsibility for loading process with a particular flight. The loading instructions should be able to match the requirements for the cargo distribution stated in the aircraft load and within the trim sheet.

Operational Safety Issues

There are a lot of security concerns that have led to rigorous procedures to ensure baggage reconciliation. This ensures that only accompanied baggage is to be loaded, unless special additional validation process for each unaccompanied bag has been followed.

Distributing the weight between the hold causes a considerable effect on the aircraft. Thus, load distribution is to be specified within the loading instruction form by hold, or through hold compartment within the case of larger under floor hold areas.

Bulk Loading

Short haul narrow body aircraft are often bulk loaded with loose individual items of cargo and baggage. In this scenario, the baggage loading will be done by item count, with the prescribed assumptions about the average weight per bag used for the purpose of completing the load and trim sheet. The precise figures vary as per the regulations as these are restrictive enough to meet the aircraft operator's own checked baggage rules.

The average checked baggage related weight assumptions vary on whether it is an international, domestic or charter or scheduled flight. In these scenarios, standard baggage weights should be applied with utmost care. There are many incidents wherein standard weights are under-state the actual mass of loaded baggage that causes error in the total mass of the aircraft and also the centre of gravity that lies outside the approved safe envelope.

Netting is used for the purpose of restraining the bulk baggage that is often received loose. It enables in holding the baggage so that it does not move around during the flight. It is to be noted that the load that is shifted within the flight is likely to impact the aircraft's centre of gravity and there may be difficulties in control, often it may cause loss of control that will prevent the baggage door from opening post flight. The same cargo netting is used for the purpose of dividing larger holds into sections.

Bulk loading is achieved by delivering the items to the airplane in a baggage train of towed trailers. In order to help individual hold compartment load correctly, a specific trailer may only contain baggage that is destined for one designated compartment. The trailer is unloaded into aircraft through conveyor belts and then it is finally positioned in the hold through loaders working within it.

Bulk loading is done through a system where loading crews are aware about the last baggage for loading on a particular flight that has arrived by use of end bag identification tag. The tag is then applied to the last checked bag sent to the aircraft. During the entire process, a system of stickers and reconciliation sheet is used. Each printed baggage contains a tag that is bar-coded sticker; it is removed and stuck on the reconciliation sheet that is done when the bag is loaded. This ensures that all the checked baggage for the given flight is loaded and is accounted for.

3.4.2 Load and Trim

A crucial step for the safety and the structural integrity of aircraft is that it is to be loaded in a way that the maximum weights that are allowed will not be exceeded and the **centre of gravity** is loaded within permissible limits of the flight. It should be able to remain within limits throughout the process of intended operation.

Once the conditions are met with, it is crucial that the flight crew is made aware about the prevailing weight and the centre of gravity so that there is no trouble related to the aircraft equipment and all things works out smoothly. Things like speed, pitch trim or stabiliser position and flap position are essential. It becomes essential to ensure that the aircraft is able to achieve published certified performance and it is able to retain the expected stability and the characteristics of control.

With all the given conditions, it becomes necessary that the aircraft baggage and the freight load should be able to comply with restrictions on carriage for dangerous goods.

3.4.3 Loading Procedures

It is essential to specify the loading requirement correctly and the responsibility of it lies with the dispatcher of aircraft loading. The instructions given decide how accurately the loading should be done as per the loading requirement and in the correct manner to the satisfaction of the client and as requested. With the inclusion of technology, the systems may determine seating options for the passengers, load disposition, better procedures and compliance that ensures that all the specifications are taken care of and implemented. All of these are contained in the loading instruction form. The form is given to the loading supervisor who is responsible for issuing certificate of compliance and then it is returned to the issuer as an evidence of work completion.

The completed load and trim sheet are then provided to the aircraft commander. The supervisor should be able to confirm things like whether dangerous goods are loaded and regulations are taken care of with proper notifications issued and signed by the aircraft commander. The original copy of the certificate is retained by the aircraft commander when on-board and the copy is then held till departure point. The supervisor is responsible for confirming any special requirements for the purpose of securing unusual items in the holds or within passenger cabin.

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Centre of gravity: It is a point from which the weight of a body or system may be considered to act. In uniform gravity it is the same as the centre of mass.

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Load and Trim Sheets

The method began with the load and trim compliance that dates back to the days when the load and trim sheets were taken care of manually with forms designed as per each aircraft type. These are as follows:

- Complete document is given to the aircraft commander
- The commander checks it for any inconsistencies and carries out simple checks and calculates the output data for any errors
- When all is satisfactory, the commander then gives a go ahead as a formal acceptance of the load and trim sheet by signing on two copies; one copy is retained by the departure agent while another by the flight crew

The departure process is different in a way that only the input data is required to be checked and the complete document is not necessarily signed by the agent who presented it.

Departure Control Systems (DCS)

Most load and trim sheets that are utilized are produced by contracted handling agents who put input of flight-specific data into a proprietary Departure Control Systems (DCS). With changing times, there are numerous DCS products available now. Some of these are operated by large airlines for commercial purposes. These are employed for the purpose of generating external user business. The process is carried out at the regional centre and printed off; it involves the operator and agent employees in handling the procedure. The output data is produced by the DCS that should be accurate as per the inputs. It is essential to guard it against input errors.

Electronic Flight Bag Generation of Load and Trim data

When it comes to cargo flights, an electronic flight bag (EFB) may be used for the purpose of calculating aircraft performance data that takes into account completed load and trim sheet. EFB is also used for the purpose of making the load and trim calculations themselves. After checking it the copy is to be left with the agent in the point of departure. Here it becomes essential to crosscheck the entire process thoroughly for avoiding any input errors.

Provisional and Final Load Sheets

DCS and the communication facility afforded by Aircraft Communications Addressing and Reporting System (ACARS) ensures that the aircraft commanders receive complete and correct loading documents with the inclusion of provisional status within the timeline. Final status documents too are included within the procedure. These are often called as Last Minute Changes (LMCs) that can be generated with the departure of aircraft before the take-off commences.

Adjustment of the Last Minute Changes (LMC)

The load-sheet is often adjusted after completion. These adjustments are referred to as last minute changes. The LMC process is the means for entering alterations or updates that occur at the final moment in either manually or electronically produced load-sheet. This does not require revisions in the main body or preparing the new document.

Any LMC increase or change must not exceed the following:

- Allowable underload calculation (Underload is the weight that still is available until the first limiting maximum weight is reached).
- Maximum mass and balance limits for zero fuel, take-off or landing.
- Limitation of any compartment that is intended to be used.

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A condition of maximum allowable change in number of passengers or hold loads as LMC is specified as per the individual operator's operation manual for each aircraft type. Operators should be able to specify similar rule for changes to balance conditions defined within index units. If there are any changes in locations or quantities, weight and balance figures too need to be recalculated and new documents should be produced. All this is done in significance in terms of aircraft mass and balance conditions. Some operators utilise fuel LMCs for lesser quantities. Fuel mass and index data should be provided and checked.

If LMC occurs after completion of documents, it is essential to bring it to the attention of the captain and it should be clearly noted within the documentation. The captain should be able to amend the mass and balance sheet. However, it is important that it is recorded within the copy during the time of departure.

Risks Arising from Aircraft Loading

The main risk in air freight loading arise due to take-off at incorrect pitch. This may happen due to the following reasons:

- The loading on aircraft is not done in the way as stated and accepted within the trim sheet. This is applicable to all the load sheet types.
- Correct input data is used for load and trim sheets, but errors occur when the output data is wrong. This is especially applicable to manual load sheets.
- The load and trim data is not applied correctly by the flight crew while calculating the aircraft take-off performance data. This includes reference speeds and for scheduling thrust settings.
- The hold load is not properly secured or contains prohibited or incorrectly packed items.

3.5 UNDERSTANDING UNIT LOADING DEVICE (ULD) AND ITS VARIED ASPECTS

Let us begin by discussing unit loading devises.

3.5.1 Unit Load Devices

Unit Load Devices or ULD are used as containers for baggage and cargo carried in the hold of suitably dimensioned and equipped aircrafts; they are secured so that they cannot move within the hold in flight. The record of all the checked bags kept with ULD is kept within the passenger aircraft for the purpose of retrieving particular items prior to the flight.

In cargo aircraft, ULDs are used in combination with other netted pallets. Straps and fittings or accessories are essential for the purpose of securing the containers or

Check Your Progress

6. How is bulk loading done?
7. How should cargo aircraft be loaded?
8. What is the usage of DCS?
9. What is LMC? When is it needed?

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pallets in position. Aircrafts that are wide bodied and narrow bodied use ULDs for the purpose of consolidating baggage or cargo items prior to loading into aircraft hold by specialised hydraulic lift equipment. The ULDs are then handled manually to the position on board utilizing roller floors before being secured in the position. ULDs must be either weighed, or the number of baggage items per container must be within a specified range and standard baggage unit weights applied.



Fig 3.1: *Unit Load Devices*

Special Procedures

Under the either system as mentioned above, special procedures may be prescribed for abnormal loads such as:

- Those covered by dangerous goods regulations
- Heavy items
- Oversized items
- Items of unusual dimensions/proportions

Heavy objects which exceed the hold floor-loading limit published in the AFM may be carried if prescribed arrangements for load spreading are available and applied.

Mass and Balance Gross Error Checks

The load report form is issued for each aircraft departure for the purpose of instructing loading teams on the quantity of baggage/cargo that should be loaded into each hold. A computerised or electronic load and trim sheet is made ready for the operating crew, the handling agent or airline will produce the load report or the instruction form with reference to the trim and load sheet.

The load instruction form is given to the loading supervisor for the purpose of instructing the load team on how the aircraft needs to be loaded and for the procedure of formally recording the actual loading with any deviations. When there is a manual load and trim sheet, the crew consults the loading supervisor and completes the load form.

With different mass and balance procedure of documentation formats and industry procedures, it is not easy to provide definitive details. The conduct of gross error checks is a complex matter and not something that is easy to understand. As for load and trim sheet, there are numerous key entries on the report form that should be checked for its accuracy. These are as follows:

- Airline/Operator
- Flight details (Routing, Flight number and Date)
- Aircraft type, variant and registration
- Distribution of hold loads (including baggage, cargo, ballast, spares, COMAT, and mail etc.)
- Void/nil fit positions
- Bags per ULD/hold
- Weight allocation to each compartment does not exceed limits
- Document edition number (if applicable)

Principal Hold Loading Risks

The principal risks associated with loading of aircraft holds are as follows:

- Holds are not loaded by the loading crew in accordance with the loading Instructions provided - and the load form is not changed to reflect these.
- Where the loading has been different to the original form and it is updated, the final change has not been applied in the correct manner to the original load-sheet calculations and checked for mass and balance limits. With all this, it is clear that everything is checked and accounted for. On airfreight, each detail is relevant.

It is to be understood that the propeller blades may get damaged due to the accidental impact from mechanised loading equipment. These impacts may go unnoticed by the team or these incidents may not be reported even after noticing them. This happens when there is seemingly no apparent damage to be reported and it looks unnecessary. It is necessary to say that the aircraft structure requires constant reporting. Even the insignificant damage to the structure comes under this category.

Consequences of mis-loading are as follows;

- Loss of control in flight
- Runway excursion during take-off or landing
- Aircraft hold damage during flight

ULD Identification

Containers and pallets should be identified by a unique combination of letters and numbers. The IATA standard system comprises 3 leading letters, 4 or 5 numerals and 2 trailing letters. The 3 leading letters (e.g. AKE, PMC) define the type of ULD; the 4 or 5 numerals are a unique number allocated by the operator and the 2 trailing letters show a 2 letter ICAO code which indicated the owner which may be an airline (e.g. BA) or a ULD leasing company (e.g. JG). Full details of the coding standards are found in the IATA ULD Technical Manual. ULDs may also carry a bar code, which will usually replicate the visible IATA-standard code.

ULD Certification

There are certain cases where certification is required, such as, containers, pallets and nets. This is done to provide airworthiness authority for the given country like the

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location of the manufacturer. There are two most common certification standards. These are as follows:

- FAA - Technical Standards Order (TSO) C90c
- EASA - ETSO C90c

Countries, such as China, Australia, etc. have complementary standards for certification of ULD. For the purpose of approving certification from the authorities, the designer should be able to come up with calculations and the test results should show that the ULD can withstand loads required as per the standards. To prove that the design is capable of restraining the contents of the ULD loaded with extreme flight conditions, these needs to be followed:

- The upload test on an LD3 container requires that the LD3 structure can survive a load of 9826 lbs in the upwards direction while restrained by just 4 locations at the base for a period of 3 seconds.
- A cargo net for a PMC pallet needs to withstand an upload of over 57000 lbs for 3 seconds.

Certified and Non-certified ULD

Mostly ULD are designed and sold as certified. But there are some exceptions. These differ with the first letter of their identification code. Certified ULD should be used on aircraft that contains holds which are insufficient in strength during extreme flight conditions. These rely on the ULD being locked to the floor of the hold. Non-certified ULD are used in an aircraft with hold structure capable of withstanding the strength of the contents at the time of extreme flight conditions. Whether it is certified or non-certified, no damaged ULD or pallet should be used for aircraft loading purposes.

Correct Use of ULD

The ULD designer is vested with the responsibility for creating clear instructions on the use of ULD and for including them in operations manual. There should be correct manual for the ULD and its use. It should be made available to all the parties involved in loading and unloading the aircraft. There are some steps that can be taken to ensure the correct use of ULD. These are as follows:

1. Every ULD should be inspected before its use to determine if any damage has occurred which would render the ULD unserviceable.
2. Baggage and cargo should be loaded evenly, paying attention to maintaining the centre of gravity of the load with 10% of the centre of the base.
3. After completing the load, the door of the container must be securely closed.
4. No certified ULD may be used for flight unless its manufacturers plate/marking (also known as TSO plate) is attached and legible. This plate/marking is required by the rules of the certifying authorities (e.g. FAA, EASA etc.) and is a legal requirement.
5. Container doors shall always be securely closed or secured in an open position.

If a ULD is not loaded in compliance with the instructions then it should not be allowed on-board. Loading of pallets is similar to loading containers, especially when giving attention to the cargo net used to secure the load to pallet.

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It is essential to remember that cargo nets are subjected to wear and tear and then it becomes unserviceable. There is no scope to use unserviceable nets or use them after unauthorised repair. It is essential that an ad-hoc repair is carried out for repairing damaged ULD using proper material or process. This could be done within the prescribed processes as mentioned below:

- A duct tape or speed-tape should not be used for closing the punctures on holding container doors or panels, especially when the proper mechanism is inoperative.
- Utilizing rope for the purpose of repairing damaged parts of a cargo net or for replacing the OEM's lashing line (corner rope)
- Attaching random 2-stud fittings into the edge of a cargo net (to secure it to a pallet) when the correct fitting is damaged.

It is up to the airlines to use the types of ULD. However, whether it is certified or non-certified, damaged ULD or pallet should not be utilized for the purpose of loading.

Loading Unloading Containers

There are several precautions and steps that need to be taken while loading/unloading containers. These are as follows:

- Checking the unit prior to starting the loading. If there is any damage, it should be under the damage limits or else ULD would not be airworthy.
- If there is a need for protecting the cargo from rain damage, then the plastic sheets should be secured within the container. These should not be around or outside the container. Additionally, the material should have passed burn rate requirements and the plat of the manufacturers should be visible.
- The bags in cargo should be stacked in interlocking style.
- Heavy cargo should not be placed in the outboard section or the overhanging section, as it may cause the container to rock or tilt this would cause loading difficulties.
- It should be ensured that the baggage in the door side is not out of place that it would extend to make the door flat when closed.
- ULD to be inspected and ensured that it lies within the designated contour. The structure should be inspected.
- Airlines guidance should be consulted for heavy items that require spreader boards. For the purpose of spreading, the weight may be tied down using cargo straps.
- Excessive force should be avoided for the purpose of operating latches while closing the door. If this is done then it would not be possible to open it when it arrives on the destination.
- Never use knives to cut open a container door.

Loading and Unloading of Pallets and Nets

The following safeguards need to be taken:

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- It is essential to carry out pre-loading check for determining that the pallet and net are serviceable prior to loading. It is essential to be careful with using cargo net for securing the load to the pallet.
- It should be determined prior to beginning the process of loading the pallet whether the cargo nets are unserviceable.
- The use of plastic sheet should be under the pallet net.
- Cargo should be loaded in an interlocking manner.
- If plastic sheeting is to be used, this must be underneath the pallet net.

After loading all cargo, the net shall be used as follows:

- The net should be over the load with the net fittings attached to the seat track. The space should be fully utilized.
- Reefing hooks should be used on either side for securing any excess net body.
- The lashing lines should be fitted as close as possible.

Storage of Empty ULD

Container racking should be used for the purpose of storing empty containers; it should be used for setting up easy transfer to the dollies or other such equipment of handling that too without a forklift. Outdoors racking should be equipped for the purpose of preventing the containers from windy conditions. If the containers are empty then it should not be left on the ground. The exception is only in case of ULD approved for forklift handling. Empty pallets may be stored in stacks, while taking care of the following:

- When the cargo nets are attached and not damaged during the process of unstacking or stacking.
- Stacks of pallets are properly built on the base pallet and secured through base pallet with the help of tie down straps.
- Removing pallets approved for fork lift to be removed without damaging the pallet edge rails.
- Permanent attachment of pallet on one side by locking the fittings or even when these are completely removable. If these are removable then it should be stored in a dry location.

Storage of Loaded ULD

Loaded ULD must always be stored on a suitable transfer vehicle such as:

- A dolly
- A slave pallet
- Container racking
- Within a cargo terminal ULD handling and storage system
- On a purpose-built road vehicle or railway wagon

It should only be transferred with the use of special purpose equipment that comprises of rollers, ball mats or something similar to it that is much more like support/ transfer devices. There are specifications related to it in International Air Transport Association (IATA) manual.

Handling of ULD

The containers are mostly made of aluminium with a thickness of 2.5mm-4mm base sheet or composite side of roof panels and having a metal door or a fabric one. These are as light as possible, however, containers may be subjected to severe conditions while handling.

The rapid growth of air cargo, especially within past 10 years has resulted in ULDs handling being undertaken in facilities that were of low standards through the implementation of inappropriate handling practices. Any damage that results in this process does not add up to the cost to aircraft operators, but these often create condition that often becomes hazardous to aircraft safety.

There are industry standards covering of handling ULD support in dollies, roller beds and racking. All these standards are to be followed as per the designed standards including forklift which should not be handled as it may lead to damage.

Safety Threats

The main purpose of ULD is improvement of flight safety in bulk loading of holds. It is essential that a serviceable ULD is loaded in the right manner. Lack of awareness may result in damage of ULD.

3.6 FREIGHTERS AND SUB-CHARTERS

Freighters can be defined as cargo aircraft or cargo jet or freight aircraft. These are often fixed-wing aircraft designed or converted for the purpose of cargo rather than carrying passengers. Such aircrafts are not inclusive of passenger amenities and feature one or more doors for the purpose of loading cargo.

Freighters are often operated by passenger or cargo airlines, private individuals, and even the armed forces of countries. If one is to look at the design of a cargo flight, these usually feature different structures that are missing in conventional passenger aircraft.

The following are the ways in which cargo aircraft differ from passenger planes:

- Tall fuselage cross-section
- High-wing that allows cargo area to sit close to the ground
- Large wheels and additional wheels for landing at a smooth pace even at unprepared locations
- High tail to allow the cargo to be directly driven on and off the aircraft

Even though cargo aircraft forms a small proportion of the overall airfreight market, most of them are equipped to carry special ULD containers within the cargo hold of passenger aircraft.

Sub-Charter

Sub-charter are nowadays known as wet lease agreements. They are basically leasing arrangement whereby one airline (the lessor) provides an aircraft, complete crew, maintenance, and insurance (ACMI) to another airline or other type of business acting as a broker of air travel (the lessee), which pays by hours operated. The head charter

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Freighters: It refers to a large ship or aircraft designed to carry goods in bulk.

Check Your Progress

10. What are ULDs?
11. List some steps to be taken to ensure the correct use of ULDs?
12. What is the use of container racking?

NOTES

or lessee remains in charge and is responsible for fulfilment of contract between them and the owner.

Advantages of Charters

Some of the advantages of charters are as follows:

- **Flight representation**: Charter experts are available for the purpose of assisting the client on ground to ensure that all the aspects of cargo are smoothly taken care of.
- **Access to more airports**: Reaching under-serviced locations, allowing your cargo to arrive closer to its final destination.
- **Experience**: Charter experts are already well trained in handling any situations. They are capable of understanding what is required to manage charter flight from the beginning to its destination.
- **Global coverage**: No matter whatever the cargo needs of the client or from whatever location, the international network of offices are able to provide with local knowledge as per the global scale.
- **Cost efficiency**: The costs are often competitive due to the availability of charter that ensures that the client is able to get the most cost effective solution.
- **Choice of aircraft**: There are numerous available options to choose from, thus fulfilling the need as per your cargo requirement.
- **Personal account manager**: A dedicated charter will be able to provide you with available round the clock services as per the requirement.

3.7 DIPLOMATIC MAILS – A, B AND C CATEGORIES, AIRLINE SCORES, MAIL ACCEPTANCE PROCEDURES, AV7, AV8 PAPERS

Airmail is mail transport service branded and sold on the basis of being airborne. The items in airmail arrive quickly as compared to surface mail; it is more efficient and so, costs more. Airmail is the best available option for sending mail to specific destinations such as overseas. Airmail is often preferred means of sending mails as it reduces the time consumed and is more reliable than any other means of transportation.

Airmail: It refers to a system of transporting mail by aircraft, typically overseas.

The Universal Postal Union adopted comprehensive rules for airmail at its 1929 Postal Union Congress in London. Since the official language of the Universal Postal Union is French, airmail items world-wide are often marked 'Par Avion,' literally 'by airplane'. In the beginning of the first half century, the transporting of mail through aircraft was under specific category and sold as airmail from the surface mail. Today, with the changing times, mail service is categorized and sold as per transit time and with the amalgamation of land, sea and air as decided on the back end in dynamic intermodal combinations. It is quite possible that even the regular mail may have gone through aircraft. It is often referred as air-speed mail that differs a bit from the nominal airmail in priority, price and branding.

Diplomatic mails

Diplomatic mails are sent through diplomatic bags in cargo. A diplomatic bag, also known as a diplomatic pouch, is a container with certain legal protections used for carrying official correspondence or other items between a diplomatic mission and its home government or other diplomatic, consular, or otherwise official entities. The physical concept of a "diplomatic bag" is flexible and therefore can take many forms (e.g., a cardboard box, briefcase, duffel bag, large suitcase, crate or even a shipping container). Additionally, a diplomatic bag usually has some form of lock and/or tamper-evident seal attached to it in order to deter or detect interference by unauthorized third parties. The most important point is that as long as it is externally marked to show its status, the "bag" has diplomatic immunity from search or seizure, as codified in article 27 of the 1961 Vienna Convention on Diplomatic Relations. It may only contain articles intended for official use. It is often escorted by a diplomatic courier, who is similarly immune from arrest and detention.

3.8 SUMMARY

Some of the important concepts discussed in this unit are:

- Airlines often come up with freight centres, schedules and routes along with their expertise to keep the cargo moving at the optimum speed regardless of what goods are being shipped.
- Air freight companies offer priority overnight services for goods. It essentially means that the goods will be delivered the next day.
- Many airlines offer variety of priority services that depend on the goods to be shipped. They may be providing reserved priority services for perishable shipments.
- Priority may be given to temperature-sensitive shipments, such as fishes, foodstuffs, dairy products, vegetables, fruits or flowers.
- Airlines offer airfreight for immediate pickup and door-to-door delivery with the shortest timeframe possible. This is referred to as same day delivery services.
- Economy shipping service is utilized by customers when one need to move a large shipment overseas cheaply in a short space of time. It usually takes 2-5 days or 4-6 business days for delivery to reach the customer.
- Consolidated freight is what most of the clients opt for. The service combines shipment with other goods that make it a cost-effective load and the rates become better with economy of scale as offered by an airline.
- With the cost of carrying surplus load on aircraft increases as per each kilo added, the weight becomes the primary factor that decides the freight charges or rates.
- Items that are restricted to be carried on air freight may be items that may endanger the aircraft or to passengers' safety or health or may cause damage to property.
- Airfreight companies are aware that the items they are carrying are urgent, temperature and time- sensitive or perishable and there is a need of careful

NOTES

Check Your Progress

13. What are some of the features in cargo flight which differ from passenger aircraft?
14. What do you mean by sub-charter?
15. Why is airmail a preferred means of sending mail to far off places?

NOTES

handling of these objects, especially when these are packed. There are regulations and issues related to different goods.

- It is for the safety of the airplane that all the cargo and baggage to be loaded has to be weighed. This weighing should be an accurate estimate of the weight using standard values.
- Short haul narrow body aircraft are often bulk loaded with loose individual items of cargo and baggage. In this scenario, the baggage loading will be done by item count, with the prescribed assumptions about the average weight per bag used for the purpose of completing the load and trim sheet.
- A crucial step for the safety and the structural integrity of aircraft is that it is to be loaded in a way that the maximum weights that are allowed will not be exceeded and the centre of gravity is loaded within permissible limits of the flight.
- Unit Load Devices or ULD are used as containers for baggage and cargo carried in the hold of suitably dimensioned and equipped aircrafts; they are secured so that they cannot move within the hold in flight.
- The load report form is issued for each aircraft departure for the purpose of instructing loading teams on the quantity of baggage/cargo that should be loaded into each hold.
- Freighters can be defined as cargo aircraft or cargo jet or freight aircraft. These are often fixed-wing aircraft designed or converted for the purpose of cargo rather than carrying passengers.
- Sub-charter are nowadays known as wet lease agreements. They are basically leasing arrangement whereby one airline (the lessor) provides an aircraft, complete crew, maintenance, and insurance (ACMI) to another airline or other type of business acting as a broker of air travel (the lessee), which pays by hours operated.
- Airmail is often preferred means of sending mails as it reduces the time consumed and is more reliable than any other means of transportation.

3.9 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Since the 1990s, cargo has been a solid player in the industry. However, with other catalysts and growth in the sector, there are many players in the market and it is rapidly affecting the changes in practices.
2. Many airlines offer variety of priority services that depend on the goods that are to be shipped. They may be providing reserved priority services for perishable shipments. Priority may be given to temperature-sensitive shipments, such as fishes, foodstuffs, dairy products, vegetables, fruits or flowers.
3. One advantage when client picks up same day delivery is that one is able to schedule the shortest possible time for the delivery of goods.
4. Shippers need to take advantage of airfreight. They often opt for affordable options. Consolidated freight is what most of the clients opt for. The service

combines shipment with other goods that make it cost-effective load and the rates become better with economy of scale as offered by an airline.

5. Some of the items which are prohibited are as follows:
   (i) Explosives
   (ii) Gases
   (iii) Flammable liquid/solid
   (iv) Toxic and infectious items
   (v) Corrosive items
   (vi) Magnetic substances
   (vii) Items dangerous to public health
   (viii) Oxidizers, organic peroxides, radioactive materials & corrosive items
   (ix) Biochemical products
6. Bulk loading is achieved by delivering the items to the airplane in a baggage train of towed trailers.
7. For the safety and the structural integrity of aircraft it is vital that it is to be loaded in a way that the maximum weights that are allowed will not exceed and the centre of gravity too is loaded within permissible limits of the flight.
8. Most load and trim sheets that are utilized are produced by contracted Handling Agents who put input of flight-specific data into a proprietary Departure Control Systems (DCS).
9. The load-sheet is often adjusted after completion. These adjustments are referred to as last minute changes. The LMC process is the means for entering alterations or updates that occur at the final moment in either manually or electronically produced load-sheet.
10. Unit Load Devices or ULDs are used as containers for baggage and cargo carried in the holds of suitably dimensioned and equipped aircraft and are secured so that they cannot move within the hold in flight.
11. These are some of the steps to be taken to ensure the correct use of ULD.
    (i) Every ULD should be inspected before its use to determine if any damage has occurred which would render the ULD unserviceable.
    (ii) Baggage and cargo should be loaded evenly, paying attention to maintaining the centre of gravity of the load with the 10% of the centre of the base.
    (iii) After completing the load, the door of the container must be securely closed.
    (iv) No certified ULD may be used for flight unless its manufacturers plate/ marking (also known as TSO plate) is attached and legible. This plate/ marking is required by the rules of the certifying authorities (eg FAA, EASA etc.) and is a legal requirement.
    (v) Container doors shall always be securely closed or secured in an open position.
12. Container racking should be used for the purpose of storing empty containers; it should be used for setting up easy transfer to the dollies or other such equipment of handling that too without a forklift.

NOTES

13. The following are some of the features where cargo flight differs from passenger aircraft:
    (i) Tall fuselage cross-section
    (ii) High-wing that allows cargo area to sit close to the ground
    (iii) Large wheels and additional wheels for landing at a smooth pace even at unprepared locations
    (iv) High tail to allow the cargo to be directly driven on and off the aircraft
14. Sub-charter are nowadays known as wet lease agreements. They are basically leasing arrangement whereby one airline (the lessor) provides an aircraft, complete crew, maintenance, and insurance (ACMI) to another airline or other type of business acting as a broker of air travel (the lessee), which pays by hours operated.
15. Airmail is often preferred means of sending mails as it reduces the time consumed and is more reliable than any other means of transportation.

3.10 QUESTIONS AND EXERCISES

Short Answer Questions

1. What do you understand by the terms 'priority service' and 'same day delivery'?
2. What is load control? What is the need for controlling the load on-board?
3. How is the load secured? What are the standard procedures for the process?
4. What is the after loading procedure that one needs to take care of?
5. Write a short note on bulk loading.

Long Answer Questions

1. What is the load and trim process in cargo loading? Why is this process necessary?
2. What are the goods that are prohibited from being shipped by air freight? What are the guidelines related to it?
3. Elaborate in detail about the limitations of air cargo?
4. Enumerate ULD and its various aspects on loading cargo.
5. How is cargo load managed if it is a passenger airline? Explain in detail.

UNIT 4 AIR CARGO DOCUMENTATION

NOTES

Structure

4.0 INTRODUCTION

NOTES

Air cargo is now a $60 billion plus industry in an airline industry that has over $700 billion in annual revenues. However, despite this upsurge in the cargo industry, there is still a lack of investments in technological upgrades needed for the growth and output in the freight industry. It is essential that the industry should focus more on implementation of advanced technology to facilitate ease and flexibility to consumers.

In order to see more competitive growth in the cargo industry, there is a need for continuous change within the existing system and for upgrading to new technology. It is imperative to seek solutions and accelerators that will be able to solve some of the shortcomings in traditional systems of cargo management.

Another thing to observe is that all the procedural formalities with the regulations should be taken care of in the same way. Additionally, paper trail should be reduced and the industry should emphasize more on e-AWB platform; user-friendly procedure for booking engines should be integrated within air cargo shipping procedure.

This unit discusses in details the documents used in the air cargo industry namely, Shipper's Export Declaration, Shipper's Export Declaration, Certificate of Origin and Export License, Commercial Invoice and Bill of Lading, Insurance Certificate and Export Packing, Role of Import License and Consular Invoice, types of Air Waybills and Dock Receipt, Warehouse Receipt and Destination Control, Shipping Bill, Conditions of Contract and Cancellation of Shipments and so forth.

4.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Analyse the significance of Air Cargo Documentation
- Explain the Shipper's Export Declaration
- Know about the Certificate of Origin and Export License
- Discuss the Commercial Invoice and Bill of Lading
- Interpret Insurance Certificate and Export Packing
- Explain the Role of Import License and Consular Invoice
- Learn about completion of Air Waybill and Mandatory information
- List the types of Air Waybills and Dock Receipt
- Enumerate Warehouse Receipt and Destination Control
- Know about Packing, Labelling and Marking
- Prepare a list of the various regulations and restrictions
- State the conditions of contract and cancellation of shipments
- Summarize communication facilities — SITA

4.2 SHIPPER'S EXPORT DECLARATION, CERTIFICATE OF ORIGIN, EXPORT LICENSE, COMMERCIAL INVOICE, CERTIFICATE OF ORIGIN, BILL OF LADING

NOTES

To process things smoothly, there is a need to follow up with the relevant documentation. While exporting products, this process is deemed necessary in particular transaction as per government norms of the importing country. Following air cargo documents are required:

- Shipper's Export Declaration (SED or form 7525-V) is one mandatory form that is made available through the printing office of the government. It can be obtained from commercial outlets as well. Filing for it can also be done electronically online.
- A Certificate of Origin is a vital document required in international trade. In other words, it is a declaration provided by an exporter that a particular product has been manufactured and produced completely in his home country. For all the international documentation, it is mandatory that the airline should be an active member of International Air Transport Association (IATA).
- CE stands for Conformité Européene in French that literally means European Conformity. The marking is a certification that is indicative of conformity to standards set by the authority, such as health, safety, and environmental protection standards for products sold within the European Economic Area (EEA). The marking is also used for products sold outside the EEA that are manufactured in, or designed to be sold in the EEA. It is essential to meet the requirement to market goods in the European Union. After earning the CE mark for its product, a manufacturer may affix the CE mark to its product. This makes it possible to market the product throughout the EU and ensure that no further modifications are required with regard to each EU member country.

4.2.1 Export License

It is required for dual use exports like commercial items that may be used for military applications or exports to prohibited countries as per the regulatory authority of the country. Most of the time, export transactions do not require specific approval from the government; it is regarding special goods that the case is applicable. Prior to shipping of products, it is essential to understand the concept as per the dual use and the basic regulations related to export control. These are as follows:

1. **Commercial Invoice**: It is a bill of goods that are provided by the seller to the one who purchases goods. These are the invoices are used by the government to to determine the true value of the goods at the time of assessing customs duties. Hence, the government uses commercial invoice for the purpose of controlling imports specifying everything related to it in its form. It may include but not limited to content, number of copies, language that is to be used and other characteristics similar to it.

Commercial Invoice: It is a legal document between the supplier and the customer that clearly describes' the sold goods, and the amount due on the customer.

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Bill of Lading: It is a detailed list of a ship's cargo in the form of a receipt given by the master of the ship to the person consigning the goods.

2. **Certificate of Origin**: It is required by some countries. In a majority of the cases, a statement of origin is printed on the letterhead of the company that is sufficient for this purpose. For instance, in US special certificates are required for trading with countries which have special trade agreements like Israel, Mexico and Canada.
3. **Bill of Lading:** It is a contract that is between the owner of the goods and the carrier, somewhat similar to domestic shipments. For vessels these are of two types: straight bill of lading that is non-negotiable and negotiable bill or shippers' order bill of lading. The latter is liable to be bought, sold or traded while the product is in transit. It is mandatory for the customer to retain an original for the purpose of ownership proof to be able to take possession of the goods.
4. **Insurance Certificate:** It is used for the purpose of assuring the consignee that the insurance will be covering the losses or damage to cargo during transit. This certificate can be obtained from the freight forwarder.
5. **Export Packing List:** It is more detailed document and contains more information as compared to a standard domestic packing list. It is able to itemize the materials in individual package and it is indicative of the types of package, such as crate, box, carton or drum. It is mandatory for the commercial stationers and freight forwarders to carry the forms.
6. **Import License:** The importer is vested with the responsibility of obtaining these licenses. It includes the copy of the rest of the documents of the importer as well. However, these often help in avoiding problems related to customs of the destination country.
7. **Consular Invoice**: The document is required in a majority of countries as it gives the description of goods that are to be shipped and informs both the consignor and consignee about the shipment value. If these are needed then one can obtain it from the embassy of the destination country where copies are available.
8. **Air Waybills:** Air waybills handle air freight shipments. These are, however, non-negotiable.
9. **Inspection Certification**: It is needed by the consignee and countries for the purpose of attesting it as per specifications of the goods that are shipped. The procedure is performed as per third party and is often obtained through independent testing organizations.
10. **A Dock Receipt and a Warehouse Receipt:** These are used for the purpose of transferring accountability especially when the item to be exported is moved through domestic carrier to the port and left for export in the ship line. Another thing to observe is that destination control statement appears on commercial invoice and air waybill and ocean bill. It is for the purpose of notifying the carrier and all the other parties, especially foreign parties that the export item is destined for certain locations.

Shipping the goods through air requires different documents which vary as per the rules and regulations of the countries involved in the shipment process. Following are some of the additional documents required in the shipment of goods:

1. **Destination Control Statement**: The Destination Control Statement generally appears on the commercial invoices such as, Airway Bill and Bill of of Lading, and Shipper's Export Declaration (SED). This statement notifies the carrier and all foreign parties that the item can be exported only to certain destinations.
2. **Additional Documentation:** Additional documentation too is required for the purpose of export of the goods from the shipping country to the destination country.

   Here are other documents you may need:
   - Dock receipt
   - Warehouse receipt
   - Insurance certificate
   - Export license
   - Certificate of handling (Fumigation Certificate)
   - Dangerous goods declaration
   - IATA Certificate of Origin

4.2.2 The Importance of Proper Documentation

Although it is a tedious task to ensure the accuracy and completeness of the entire documentation for freight, it is essential to ensure that the documents are accurate.

Even small errors and omissions are enough to result in severe consequences. These can be as follows:

- Delayed shipment of goods
- Non-shipment of your goods
- Cost of extended storage (until appropriate documentation is received)
- Penalty for missing or incorrect documentation

It is essential to fill all the details in the shipping form completely as it is a crucial document of air freight. Therefore, it is equally essential to revise your current documentation process. For making things easier, it is better to look for airlines offering online documentation solutions.

4.3 INSURANCE CERTIFICATE, EXPORT PACKING LIST, IMPORT LICENSE, CONSULAR INVOICE

Let us begin by discussing insurance certificates.

4.3.1 Insurance Certificates

These are used for the purpose of assuring the consignee that his cargo has insurance cover which means that the insurance company will cover any loss or liability that the cargo is expected to meet in the transit process. These certificates are easily available with the freight forwarder. It is to be noted that an air waybill will suffice as an insurance certificate for shipment by air. However, in some cases, the countries may need notification or certificate.

NOTES

Check Your Progress

1. What is Shipper's Export Declaration?
2. What role does export license play in the air freight industry?
3. List some documents needed prior to shipping of goods/services.

4.3.2 Export Packing List

NOTES

It is comparatively more detailed than the other shipping export documents and and contains more information than a standard domestic packing list. This list contains information about invoice number, the number of items, drum, or carton, date of shipment, mode of transport, shipper, carrier and buyer information. Additionally, it also contains description about the kind of package like whether it is a box, crate, the quantity of packages, total net and gross weight (in kilograms), package marks, and dimensions, if appropriate.

This document is also available with stationary houses and freight forwarders. It is to be noted that the packing list serves the purpose of conforming document. However, it still cannot replace commercial invoice. Additionally, it may be used for the purpose of checking the cargo.

4.3.3 Import License

The responsibility of this document is vested with the importer and these depend on the destination and product. However, it is possible to include import license along with all the other documents that an exporter has. This will help to smoothen the transition and documentation procedure as required by customs where the goods are to be transported to the destination country.

4.3.4 Consular Invoice

This document is demanded by few countries. It describes all about the goods that are to be shipped along with the information about the consignee and consignor along and the value of the shipment. If needed, copies can be obtained from the destination country's embassy. This document may be expensive and the cost is often discussed with the buyer.

4.4 UNDERSTANDING AIR WAYBILLS (AWBS AND BLS)

Let us now discuss air waybill.

4.4.1 Air Waybill

Air Waybills (AWB) are a form of Bill of Lading (BOL). These are used in both domestic and international flights. An AWB is also referred to as a document or a receipt that is issued by a carrier or an airline on behalf of shipper for goods that are received. It serves as an evidence of the contract of carriage that ensures that the good are carried to the specified airport with all the necessary conditions satisified. However, it is not a document that gives title to the goods. It is non-negotiable. The AWB is completed by the agent/exporter or the shipper. It becomes the proof for:

1. The shipped good as it serves as the receipt for it.
2. Evidence of the contract of carriage.
3. It is the invoice that is for the freight, reflects the shipper, consignee and the goods shipped.

4. A certificate of insurance (if carriers insurance is requested by the shipper).
5. A guide to airline staff for the handling, dispatch and delivery of the consignment
6. A means of clearing the goods through customs.

NOTES

There are three originals and nine copies with regard to AWB. The first original is for the carrier or the airline and it is signed by the exporter or the agent. The second one is for the consignee that too is signed by the exporter or the agent; it is followed by the goods. The third one is signed by the carrier and this is given to the agent or the exporter as a receipt for the goods after the goods are accepted for the carriage.

It is essential to note that the AWB is to be followed with the commercial invoice, certificate of origin, packing list and any other such document deemed necessary for the purpose of clearing the goods through the customs. This may include health certificates as well. AWBs tracking numbers are used for the purpose of checking the status of delivery and for the current position or for checking the status of delivery of the goods that are being transported.

4.4.2 Types of Air Waybills

There are two types of air waybills that are utilized for the purpose of international transportation of air cargo:

1. The 'airline air waybill', with pre-printed issuing carrier identification.
2. The 'neutral air waybill' without pre-printed identification of the issuing carrier in any form and used by other bodies than air carriers (such as freight forwarder).

It is a document that accompanies goods that are shipped by an international courier for the purpose of providing detailed information regarding shipment and helps in tracking it too. There are multiple copies of air waybill (AWB) so that everyone involved in shipment is able to document it.

These bills contain information such as the consignor's name, address, along with the name and address of the consignee. Other details like airport codes related to origin and destination, shipment value for customs and other pieces, description of goods, gross weight and special instructions, especially when it is related to perishable goods. It contains contract conditions as per the carriers' terms and conditions. It is related to liability limits and claims procedures.

4.4.3 House and Master AWBs and BLs

Consolidations service provider will be issuing their own air waybill of bill of lading. Both are referred to as AWB. It is often called a forwarder's AWB or the House AWB that is equal to House BL. These are the contracts of carriage between the forwarder and the shipper. The forwarder becomes the deemed carrier. The forwarder is in contract with one or more carriers. This is when more than one mode of transportation is used.

Master air waybill or MAWB or MBL is the contract of carriage between the forwarder and the carrier.

A House Air Waybill (HAWB) or Bill of Lading (HBL) could act as a multimodal transport document.

Check Your Progress

4. What is an Air Waybill?
5. List the types of Air Waybills.

4.5 INSPECTION CERTIFICATION AND OTHER DOCUMENTS

NOTES

Let us now study inspection certificates.

4.5.1 Inspection Certification

It is needed by both the consignor and the consignee and to the importing and exporting countries. This certification is done by a third party and often it is obtained from independent testing organizations.

When the product's value is high or while dealing with conscientious customer, there is a need of inspection certificate. This certificate serves as a proof of what items are to be shipped and what the customer ordered. It is also an assurance about the good quality as well. If a customer is asking for the document then ensure that the administrative and inspection fee are covered. At the same time, inspection agency needs to be engaged. If you are not able to find an independent agency, then it is better to refer to your local import/export team, for example, your logistics expert who will help you in preparing a suitable contract.

It is easy to finish inspection certificate as it is directly furnished to the buyer, the government of the buyer or directly to the bank of the buyer. If you are presenting it to the bank of the buyer then it should be complete with the letter of credit payment transaction that is able to provide detail of everything on an inspection certificate. It should be able to fulfil the payment obligations. Generally, a manufacturer is the one furnishing the report or the certificate.

4.5.2 International Inspection Companies

Numerous companies are already in contract with international inspection companies. This helps in verifying the quality, quantity and price of shipments that are to be imported within their countries.

Here are four such companies:

- Bureau Veritas Group
- Cotecna
- Intertek
- SGS

4.5.3 Countries Requiring 'Pre-Shipment Inspections' (PSIs)

Countries need pre-shipment inspection certificates that change each year. These are often based on the specific value of the shipment. Some countries require inspection certificate that is regardless of value. It is better to inquire about it.

4.5.4 Other Inspection Documents

If the export is related to agricultural produce such as grains, seeds, vegetables, fruits and nuts then there is a need for federal phytosanitary inspection certificate. A phytosanitary certificate for export is usually issued by the National Plant Protection Organization (NPPO) of the country where the plants, plant products or regulated

articles were grown or processed. Phytosanitary certificates are issued to indicate that consignments of plants, plant products or other regulated articles meet specified phytosanitary import requirements and are in conformity with the certifying statement of the appropriate model certificate. The certificate is indicative of the fact that the shipment has been inspected and it is free from toxic plant and pest disease. Additionally, another certificate such as export certificate for processed products and quality certificate along with condition certificate too are issued. However, it is essential to notice that, if the phytosanitary certificate is not issued then the goods will be denied entry into the country. If health certification is not obtained then export certificate can be obtained.

Quality certificate and condition are offered for processed products that follow official inspection and grading of canned, dehydrated fruits, frozen fruits and vegetables and other such related products. The certificate is obtained free of cost and it can be customized to meet specific needs related to import and export.

Exporters also need the following statements/documents. These are as follows:

1. **Destination Control Statement:** It comes along with the commercial invoice, and the ocean or air waybill of lading for the purpose of notifying the carrier and all the foreign parties about the export of the item to certain destinations. More details are given in the next section.
2. **A Shipper's Export Declaration (SED):** As is mentioned above, it is used for the purpose of controlling exports and for the officials' export statistics. SEDs should be prepared for the purpose of shipments through postal service. SEDs should require shipments that are through postal services valued over $500; these are required for the purpose of postal service of value commodities that are classified under single schedule. SEDs should be prepared regardless of the value of shipments that require an export license or destined for countries restricted by the Export Administration Regulations. SEDs are either prepared by the exporter or the exporter's agent. These are often filed electronically; and it is filed prior to the shipment departure.
3. **Shipper's Letter of Instructions:** It refers to the shipping instructions for the forwarder or carrier that originates from the shipper or exporter.
4. **An Export License:** It is a government document created for the purpose of authorizing the export of specific goods with specific quantities towards a particular destination. This document is needed for the purpose of exports to some countries and In special circumstances in some countries.
5. **A Packing List:** It provides a detailed list of items in every package and it is indicative of the kind of package as well. Package markings should be visible along with the shippers' and buyer's references. This list is utilized by the shipper or the forwarding agent that ensures the total shipment weight and volume along with the shipment of correct cargo. Additionally, the list may be used by the customs officials for the purpose of checking the list in cargo.
6. **A Cargo Insurance Certificate: It is** used for the purpose of assuring the consignee that the insurance company will be covering the loss and damage that the cargo suffers during transition.

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Export License: It is a government document granting the licensee the right to export a specific quantity of a commodity to a specified country.

Check Your Progress

6. What do you mean by House and Master Air Waybills?
7. Why do exporters need dock and warehouse receipts?
8. List some international inspection companies functioning in the freight industry.

4.6 DOCK AND WAREHOUSE RECEIPT, DESTINATION CONTROL STATEMENT-PACKING, LABELLING AND MARKING

NOTES

Let us look at dock and warehouse receipts.

4.6.1 Dock & Warehouse Receipt

These receipts provide the proof of the ownership of commodities such as proof of the owned shipped commodities that are stored within the vault, warehouse or the depository for the purpose of safekeeping. These receipts can be both negotiable and non-negotiable. Negotiable receipts allow for the transfer of the ownership of the commodity without delivering the commodity physically. Most of the receipts are issued in the negotiable form which makes them eligible as collateral for the purpose of loans.

Non-negotiable receipts must be endorsed upon transfer. Warehouse receipts are able to guarantee existence and the availability of a commodity with regard to a particular quantity, quality and type in a storage facility. The transfer of ownership too is also apparent as per the immediate delivery or for the purpose of delivery in future date. It is more about settling expiring future contracts than the delivery of actual commodity. These receipts are also indicative of the ownership of the inventory goods or the goods that are unfurnished yet stored in a warehouse by a distributor or a manufacturer.

Dock receipt is for the purpose of transferring accountability when the export item is moved from domestic carrier towards the porter of embarkation or the warehouse. Then it is left on the ship or with the forwarding agent for export. All the receipts of dock and warehouse are issued through electronic systems and these are then sent to the client, consignee or the shipper. Dock receipt is designed for the purpose of providing the exporter the proof of delivery of the cargo to the international carrier in good condition. The carrier inland delivers the goods to the warehouse company or operator through the carrier as arranged by the freight forwarder.

The exporter has to prepare the dock receipt. If not, then it is the freight forwarder and then it is signed by the warehouse worker or the agent. The receipt is often accompanied by the cargo on the time of the delivery to the pier or it is emailed or faxed to the stevedore to the pier that is receiving the cargo.

After the delivery of the goods and signing for it, the inland carrier is able to provide the doc receipt to the freight forwarder. This is the evidence that it has successfully completed the delivery of goods. It is important when the goods are either lost or damaged after delivering it to the dock even before the arrival at the international destination.

4.6.2 Destination Control Statement

It is a legal document that is required by the Export Administration Regulations (EAR) and the International Traffic in Arms Regulations (ITAR). It states that the goods that are about to be exported are destined to the indicated country as in all the shipping related documents. It is a legal document that clarifies what takes place to the shipments.

It also states that the buyers are not going to forward them to another country without legal consent.

The statement required by the Bureau of Industry and Security (BIS) under the EAR was different than the statement required by the State Department under the ITAR. These regulations are required for the purpose of destination control statement that is needed to appear on the commercial invoice only. It would not appear on any other export documents that follow the merchandise to its final destination.

When Is the Destination Control Statement Required?

According to BIS, all exported items listed on the Commerce Control List that are not classified as per the stipulated regulation are not eligible for the purpose of obtaining the license. For this reason, a Destination Control Statement is required. Exceptions related to the statement too are mentioned within the documents that are defined by the commerce department, an attorney or even the freight forwarder.

The new harmonized Destination Control Statement should be able to fulfil the following minimum requirements:

- The items are controlled by the government and authorized for export to the ultimate destination.
- It is only to be used by the ultimate end-users or consignee as identified.
- These are not to be resold, disposed of or transferred to any person or country other than the authorized end-user or ultimate consignee.
- It should be either on the original form or after it is incorporated in other items without the government's approval or approval by the said law and regulations.

4.6.3 Labelling

(a) Cargo Aircraft Only Labels: Utilizing the facility of air cargo requires careful consideration. Sensitive cargo needs careful handling. The labels are essential to cargo packaging as they help in determining the quality of goods. For instance, bright orange labels are a sign that the cargo is not to be loaded on passenger aircraft as it may he hazardous for the passengers. These types of cargo are often packed in PVC-free vinyl or in paper. Another kind of sensitive cargo would be lithium batteries without equipment that should be mentioned through specialized label that would be aircraft only label.

(b) Air Shipping Labels: When handling hazardous class, labels specialized markings are to be utilized. They often contain labels like 'This End Up', 'Keep Away From Heat' and 'Perishable' among others. These labels comply with the shipping standards that comply with the shipping marking requirements of International Air Transport, International Civil Aviation Organization (ICAO) and Department of Transportation (DOT). The standards and regulations should be tested thoroughly that should fulfil the compliances and help in smooth shipment.

4.6.4 How to Label Your Cargo Shipment

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Packaging and labelling requirements should be able to ensure that the cargo shipments are handled in accordance with the instructions and requirements.

There are numerous labelling requirements. These are as follows:

- It should be legibly marked in accordance to two adjoining sides with the name, street address and contact number for both consignor and consignee.
- Old shipping labels and markings must be removed.
- All cargo shipments with prior reservations need to depict the reservation or Air Waybill number.
- Shipments of personal effects and animals that show 'hold at airport' as a consignee address are unacceptable.
- All hazardous material/dangerous goods shipments must be labelled as per the International Air Transport Association (IATA) Dangerous Goods Regulation.

4.6.5 Limited Quantity Labels and Regulated Markings

Labels help in avoiding mishandling of the shipments as they comply with regulated markings and the labels are authentic too. Paper markings, PVC-free vinyl, pictographs help in conveying the information about the shipment and handling to the personnel involved in moving the shipments. All the labels should be in compliance with the regulations and standards and should be able to ensure worry-free transit of goods in rightful condition even when the goods are categorized as dangerous goods.

4.7 RESTRICTIONS, GOVERNMENT REGULATIONS AND FORMALITIES: AN OVERVIEW

Let us now look at documents required under FEMA rules.

4.7.1 Documents for Declaration of Goods under Foreign Exchange Rules

Section 7 of The Foreign Exchange Management Act (FEMA), 1999 lays down the statutory control concerning exports in India. Under the given regulation, every exporter of goods or software in physical form or through any other form, either directly or indirectly, to anyplace outside India other than Nepal & Bhutan shall furnish to the specified authority a declaration in prescribed form and supported by such evidence as may be specified.

Goods like trade samples, personal gifts, and other such categories should be sent for testing. Defective goods should be sent outside for repair and these are exempted from the regulations as stated above.

The appropriate declaration forms are:

1. Guaranteed Remittance (GR) forms: GR Form is an exchange control document required by the Reserve Bank of India (RBI). As per the exchange control regulations, an exporter has to realize export proceeds

Check Your Progress

9. When is the Destination Control Statement Required?
10. List the types of labelling.

within 180 days of the shipment of goods from India. In order to ensure this, the RBI has introduced the GR procedure.

2. Statutory Declaration Form (SDF): A document submitted to customs authorities by exporters verifying that shipping bills are accurate and complete. The government is to introduce the Electronic Data Interchange (EDI) system to help in processing the shipping bill.
3. Personal Particulars (PP) form: For exports by post
4. SOFTEX: This is completed in triplicate form for exporting the software or else in physical form like paper media, disks and magnetic tapes.

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Features of GR Form

- It is submitted in duplicate form when it is provided to the customs, at the port of shipment along with other documents like the shipping bill. These certify the value declared by the exporter and also record the assessable value of the goods.
- Customs give back one copy to the exporter and retain the original for transmission to the RBI.
- The exporter is required to negotiate the shipping documents through his bankers (authorized dealers), along with the GR form, within 21 days of the shipment.
- The authorized dealer reports to the RBI after negotiation of documents and has to retain the documents till the full exports proceeds have been realized, and thereafter, these documents are sent to the RBI.

Features of Electronic Data Interchange (EDI)

- This is used electronically for the purpose of transmitting documents such as purchase orders, invoices, shipping bills, receiving advices and other standard business correspondences.
- The excise and customs department is now using electronic means for processing of bills of entry, clearing of shipping bills for export and all documents relating to imports and exports are being processed online.
- With the recent development, all types of bills of entry for import of goods under export related schemes, for example, 100 per cent EOUS, EPCG SCHEME, EPZ, STP, EHTP, DEPB, DEEC, and imports for research purposes are being processed on the EDI system.

Features of SDF Form

- Ever since the introduction of EDI system at certain customs offices, the existing declaration in form GR is being replaced by SDF (Statutory Declaration Form).
- SDF form is to be submitted in duplicate and annexed to the relative shipping bill to the concerned commissioner of customs.
- After verifying and authenticating the declaration, the commissioner hands the documents to the exporter, exchange control copy of the shipping bill and the SDF form annexed thereto.

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- This must be submitted to the authorized dealer, within 21 days from the date of export, along with other shipping documents for negotiation.
- The manner of disposal of the shipping bill and the SDF form annexed thereto is the same as that of the GR form.

According to export of goods and services regulations, 2000, duplicate copy of SOFTEX along with a copy of the invoice may be retained by authorized dealers.

4.7.2 Documents for Transportation of Goods

- Airway bill or air consignment note
- Bill of lading
- Mate's receipt
- Combined transport document: Inland Container Deport (ICD) systems have been set-up at various centres for the convenience of exporters. The movement of goods from ICDS to the destination is covered by the combined transport document.

Airway bill or air consignment note

- AWB is the receipt issued by an airline company or its agent for the carriage of goods.
- It is not a document of title and not issued in a negotiable form.
- The goods are delivered as per the mention of the consignee on the AWB, after identifying as the party named in the AWB as the consignee / receiver, against payment of charges(if any).
- It is, therefore, desirable to consign the goods in the name of the foreign corresponding bank, as it will enable us to retain the control of the goods, till payment is made/ documents are accepted for payment.

Mate's receipt

- This is a receipt that is issued by the commander of the ship at the time of loading the cargo. This receipt serves as face evidence that goods have been loaded in the vessel.
- It is first handed over to the port trust authorities and on receipt of the port dues, the port trust authorities hand the mate's receipt to the exporter or his agent.
- It should be handed over to the shipping company for obtaining the bill of lading.
- This document is transferable and it is of two types:
    1. **Clean Mate's receipt**: It ensures that the goods are received well in order, properly packed and without any defect or damages.
    2. **Qualified Mate's receipt**: It is for the goods that have not been packed properly or received damaged. If this is the case then the shipping company does not take any responsibility for damage in transit.

4.7.3 Shipping Bill and Bill of Entry

This is the primary document required by customs authority for the clearance of goods for shipment. Where the goods are to be cleared by land customs, bill of export is prepared instead of the shipping bill.

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The Bill of export is also of four types:

1. White for export of duty free goods.
2. Green for export of goods under claim for duty drawback.
3. Yellow for export of dutiable goods.
4. Pink for export of duty free goods ex - bond.

Shipping bill is an essential document that is required by the custom authorities for the purpose of exporting the shipment.

The document is prepared by the exporter and it contains details like the name of the vessel, port of discharge, final destination country, name and address of the exporter, package details, quantity, numbers and details related to the Free on Board (FOB) price, total number of packages, details regarding each case. It also includes weight and value along with the name and address of the importer.

The shipping bills are of following types:

1. Duty free shipping bill - no duty or cess applicable
2. Dutiable shipping bill - goods subject to export duty / cess
3. Drawback shipping bill
4. Shipping bill for shipment ex - bond - for goods imported for re – export

The following documents are required for the processing of the shipping bill:

1. Duplicate GR forms for the process of shipment to all the countries.
2. Four copies of the packing list mentioning the contents, quantity, gross and net weight of each packages.
3. Four copies of invoices which contains all relevant contents, particulars like the number of packages, quantity, unit price, total fob, total CIF full value and full description of goods and so forth.
4. AR4 (both original and duplicate) and invoice.
5. Inspection / examination certificate.

4.7.4 Bill of Entry

(a) Bill of Entry in Indian customs: It is more of a declaration that is done on the part of an importer or the exporter about exact nature, precise quantity and the value of goods that are landed or are to be shipped out. These documents are often prepared by a customs clerk or the broker, examined by the customs authorities that ensure accuracy and conformity to the tariff and regulations.

It is to be provided within a span of 30 days with the arrival of goods at the custom station. After this, cargo is auctioned by the authorities. However, extension for the filing of the bill can be done by the importers within the same limit of days within the arrival of the goods in India that too in special cases.

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(b) **Export Bill of Entry**: It is a legal document provided to the customs department by the importer or his customs broker. Additionally, it can also be filed by the agent to undergo necessary import customs clearance formalities to take the goods out customs.

(c) **Bill of Entry in Import Management**: This bill is generally filed by an importer or a Custom House Agent. It is filed for the purpose of proceedings related to customs clearance and other formalities related to it that enables in goods clearing out of customs.

(d) **HSN Code for GST :** GST uses the Harmonized System of Nomenclature (HSN) code that helps in classification of goods for the purpose of levying taxes. It is the internationally accepted methodology for the purpose of tracking the goods in international trade.

(e) **Changes to the Bill of Entry under GST:** Ever since the implementation of GST in India, the entry format is changed to GSTIN importer that should be mentioned in the document. If this is not available then provisional GSTIN is made available. It is on the basis of GSTIN that the input tax credit is provided to the importer for IGST and GST Compensation Cess paid during import. However, input tax credit would not be provided for the basic customs duty paid on the import.

4.8 AIRLINE BOOKING PROCEDURE

Airline reservation systems comprise of numerous procedures, such as airline schedules, fare tariffs, passenger reservations and ticket records. The distribution works within their personalized reservation system. It also provides information to the Global Distribution System (GDS).

Distribution of channels and travel agencies are able to access GDS. This is same as the airline reservation system. All the messages are transmitted via standardized messaging system that works on two types of messaging that are able to transmit on SITA or Société Internationale de Télécommunications Aéronautiques. These messaging types are called Type A [usually EDIFACT format] for real-time interactive communication and Type B [TTY] for informational and booking type of messages. Message construction standards set by IATA and ICAO, are global, and apply to more than air transportation. The reservation systems of the airline are business critical applications, these are quite complex functionally. The in-house function of reservation system is expensive for this reason.

Prior to the system of deregulation, airlines had their own reservation system. The travel agents required to subscribe to it. However, in recent times, GDS is openly available and is being run independently by the airlines companies and travel agencies along with other major subscribers.

4.8.1 Inventory Management

Inventory management is the supervision of non-capitalized assets (***inventory***) and ***stock*** items. It is generally classified into service classes (for example, first, business or economy class) and contains as much as 26 booking classes. These are priced differently and booking conditions apply.

Inventory Management: It refers to the supervision of non-capitalized assets (inventory) and stock items.

Check Your Progress

11. What do you mean by Mate's receipt?
12. What is Bill of Entry?

NOTES

The data for inventory is maintained and imported through the process of scheduled distribution containing standardized interfaces. Inventory control is the primary function of inventory management. Inventory control is able to control the number of seats availability in different booking classes. It is done through the process of opening and closing individual booking classed for the purpose of sale. The combinations related to the fares and booking conditions are stored in Fare Quote System; it is here that the price for each sold seat is determined.

Inventory control is real-time in majority of cases within the management system for supporting a permanent optimization of the booking classes offered with regard to the response of changes that are in demand or as per the pricing strategies of a competitor.

4.8.2 Fare Quote and Ticketing

The fare data store contains fare tariffs, rule sets, routing maps, class of service tables, and some tax information that construct the price – 'the fare'. It comprises rule-like conditions such as, advance purchase or minimum stay. Every plan is tailored differently to different city zones or pairs as per the assigned class of service corresponding to its appropriate inventory bucket.

It is also manipulated manually by the means of feeds, dynamically controlling how many seats are offered for a particular price by opening and closing particular classes.

A fare basis code is the compiled set of fare conditions. There are two systems set up for the interchange of fares data —Airline Tariff Publishing Company (ATPCO) and SITA, plus some system to system direct connects.

Ticketing is complex due to the numerous issues and with the storage of electronic records, there is little amount of paper tickets that are issued.

Miscellaneous charges order (MCO) is still a paper document. IATA has defined it through working groups that enables in replacement of document that are referred as the electronic multipurpose document (EMD). The database contains all the information such as electronic ticket information that contains details like the ticket number, fare, tax components of the ticket price including the exchange rate information.

4.9 CONDITIONS OF CONTRACT, CANCELLATION OF SHIPMENTS, COMMUNICATION FACILITIES AND SITA

4.9.1 Shipping Agreement

Often, there is a need of shipping your goods from starting point A to destination point B or maybe you are yourself shipping the goods. Whatever the case may be, it is always the norm to use shipping agreements which establishe the relationship between the shipping company and the manufacturer or even the distributor of the goods. Creating shipping agreement quickly and easily is what is required. Now, it becomes essential to understand why it is required. Following are the two reasons for creating it:

Check Your Progress

13. What are the different components of the airline booking procedure?
14. How is data for inventory maintained?

(i) You are hiring a shipping company to ship goods and products.

(ii) You are being hired for shipping services.

4.9.2 Conditions of Contract

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There are several conditions. These are as follows:

1. In tendering the shipment described herein for carriage, shipper agrees to these conditions of contract in which no agent or employee of the parties may alter, and that this airbill is non-negotiable and has been prepared by him or on his behalf by the carrier.
2. It is mutually agreed that the shipment described herein is accepted on the date hereof in apparent good order (except as noted) for carriage as specified herein, subject to governing classifications and tariffs in effect as of the date hereof. Said classifications and tariffs are available for inspection by the parties hereto and are hereby incorporated into and made part of this contract. Tariffs will not apply when quotations are given by the carrier for an individual shipment.
3. Transportation liability is limited to .50/lbs., $50.00 or the actual value of each piece which may have been lost or damaged, whichever is less. If there is a declared value, a rider insurance policy must be purchased from the transportation provider at the time the shipment is placed.
4. Shipper must enter the amount of any shipper's COD (cash on delivery) which shall be collected subject to the fee and rules of the delivering carrier.
5. The carrier's routing applies unless shipper inserts specific routing.
6. Delivery will be made by the delivering carrier to the consignee at a point where the delivery service is available at the applicable tariff charges unless instructions to deliver at city terminal or airport terminal are specified by shipper under special instruction.
7. Shipment may be diverted to motor or other carrier as per tariff rule unless shipper gives other instructions hereon.
8. If dimensional weight applies under tariff rule show dimensions in inches on air bill thus: length x width x height ÷ 194 = chargeable weight per piece. (Dimensional divisor on international cargo is 166.)
9. Terms of payment: Net due in 15 days from date of shipment contract or special rates may be considered void and the shipment re-rated at full charges if invoice is not paid in 30 days. Contract or special rates only apply only to prepaid shipments unless specifically stated in contract rate proposal.
10. Invoices thirty (30) days old may be charged 1 & 1/2 per cent interest per month or the maximum amount allowable by law.
11. More than often, transportation provider or agent will not be responsible for any consequential damages resulting from loss or delay of shipment.
12. Shipper agrees by signing air bill to be responsible for all freight charges if unable to collect from consignee or third party within 45 days.

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13. Claims for damaged shipments must be made within 30 days of ship date. Notification of concealed damage must be made within 24 hours of receipt. Original shipping carton and contents must be retained by consignee for inspection. Claims for overcharges must be presented within 30 days.
14. Shipments (insured or uninsured) must be packed to withstand the normal hazards of transportation for any claim to be valid. Insurance coverage is not available on furs, gold, or works of art.
15. International air carriage (as defined in forwarder's tariff) is subject to the rules relating to liability established by the convention for the unification of certain rules relating to international carriage by air.

4.9.3 Société Internationale de Télécommunications Aéronautiques (SITA)

SITA or Société Internationale de Télécommunications Aéronautiques was founded in February 1949 by eleven airlines in order to bring about shared infrastructure cost efficiency by combining their communications networks. SITA was the first company to handle data traffic in real-time via a packet switched network over common carrier leased lines.

It is not an easy task to manage IT infrastructure of global airline that is extremely complex. There are multiple vendors and service providers in different countries. Managing infrastructure of the airline, SITA is able to address this complex problem by transferring the control of all or a given part of IT and communications services. This also includes vendor management.

SITA acts more like service integrator, handling management services and activities throughout the ecosystem of the providers consistently, in a transparent manner that is scalable too. The entire structure is supported by means of modular framework that is based on Service Integration and Management (SIAM) model pioneered by the UK Government.

The framework is able to facilitate the integrated operation and management to airlines IT services with multiple providers, single accountability with service delivery option.

4.9.4 SITA and Its Services

SITA provides broadest portfolio of IT and infrastructure solutions to every sector with air transport community. It is all about managing and developing the business solutions with the world's most extensive network portfolio. It contains consultancy design integration and deployment of various IT solutions.

The system is owned by more than 400 members of the air transport industry. It has a unique understanding with relation to the needs of the industry and it emphasizes on innovative technology. It is possible that majority of the airlines and airports are utilizing SITA. Majority of the management solutions are said to be utilized by several governments. It is said to have its presence in more than 1000 airports throughout the world and a team that comprises a staff of more than 2000, SITA delivers a service to 200 countries with thousands of customers.

4.9.5 Advantage of SITA

NOTES

There are numerous advantages of SITA. These are as follows:

- **It increases operational efficiency and reduce cost:** Whether it is about seeking cost reduction or simplifying solutions or expanding routes, the infrastructure management helps in bringing back the focus to critical resources that are more likely to be strategic imperatives, facilitating the transformation required as per the current trend.
- **Multi-supplier integration and management:** The system is able to eliminate the complexity with relation to the management process and the toolsets that are available across global suppliers. At the same time, it offers the advantage of improved cost control, performance management and with more flexibility that is adapting to the changing strategies of businesses.
- **End-to-end service management:** The system is able to facilitate end-to-end service operations and it is able to manage it all throughout multiple providers consistently. It is able to provide accountability with single point and the service level management throughout suppliers with centralized reporting.
- **Increased visibility and control:** The service is more like self-service with integrated service that is able to manage service portal through the procedure of enhanced reporting tools and it includes full spectrum of IT service functionality that helps manage all. With the ability to deliver full visibility in commercial and operational performance with all the service suppliers. Through SITA, the technologies and innovations are able to provide better ways for enhanced operations while saving cost engaging exclusive vendor partnerships.
- **Comprehensive and flexible solution:** The system is capable of evaluating and analysing the current infrastructure for making recommendations to be able to improve, to formulate tailored services for accommodating the airline. Whether it is about creating a new facility or for the purpose of managing a complex network that includes voice and data communications the infrastructure of the airlines can be adjusted accordingly as per the operations required. Other things like IT environment and budget too are managed by the system.

4.10 SUMMARY

Some of the important concepts discussed in this unit are:

- Paper trail should be reduced and the industry should emphasize more on e-AWB platform; user friendly procedure for booking engines should be integrated within air cargo shipping procedure.
- It is to be noted that an air waybills will suffice as an insurance certificate for shipment by air. However, in some cases, the countries may need notification or certificate.
- Government using commercial invoice for the purpose of controlling imports specify everything related to it in its form. It may include but not limited to content, number of copies, language that is to be used and other characteristics similar to it.

Check Your Progress

15. When was SITA established and what was its main objective?
16. List some advantages of SITA.

- A Certificate of Origin is required for the process of shipments that are outside the commercial zones.
- CE stands for Conformité Européene in French that literally means European Conformity. The marking is a certification that is indicative of conformity with relation to standards set by the authority, such as health, safety, and environmental protection standards for products sold within the European Economic Area (EEA).
- Shipper's Export Declaration (SED or form 7525-V). This is one mandatory form that is made available through the printing office of the government. It can be obtained from commercial outlets. Filing for it can also be done electronically online.
- AWB is also referred to as a document or a receipt that is issued by a carrier or an airline on behalf of shipper for goods that are received. It serves as an evidence of the contract of carriage that ensures that the good are carried to the specified airport with all the conditions are met with.
- It is essential to note that the AWB is to be followed with commercial invoice, certificate of origin, packing list and any other such document that is deemed necessary for the purpose of clearing the goods through the customs this may include health certificates.
- Airline reservation systems comprise of numerous procedures, such as airline schedules, fare tariffs, passenger reservations and ticket records. The distribution works within their personalized reservation system. It also pushes out information to the Global Distribution System (GDS).
- SITA acts more like service integrator, handling management services and activities throughout the ecosystem of the providers consistently, in a transparent manner that is scalable too. The entire structure is supported by means of modular framework that is based on Service Integration and Management (SIAM) model pioneered by the UK Government.

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5.11 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Shipper's Export Declaration (SED or form 7525-V) is one mandatory form that is made available through the printing office of the government. It can be obtained from commercial outlets as well. It can also be filed electronically online.
2. Export license is required for dual use exports like commercial items that may be used for military applications or exports to prohibited countries as per the regulatory authority.
3. Some of the documents needed prior to shipping of goods/services are:
   - Commercial Invoice
   - Certificate of Origin
   - Bill of Lading
   - Insurance Certificate
   - Export Packing List

- Import License
- Air Waybills
- A Dock Receipt and a Warehouse Receipt

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4. Air Waybills are a form of BOL or Bill of Lading. These serve the purpose of both the domestic and international flights. An AWB is also referred to as a document or a receipt that is issued by a carrier or an airline on behalf of shipper for goods that are received.
5. There are two types of Air Waybills that are utilized for the purpose of international transportation of air cargo:
   (i) The 'airline air waybill', with pre-printed issuing carrier identification.
   (ii) The 'neutral air waybill' without pre-printed identification of the issuing carrier in any form and used by other bodies than air carriers (such as freight forwarder).
6. Consolidations service provider will be issuing their own air waybill of bill of lading. Both are referred to as AWB. It is often called a forwarder's AWB or the House AWB that is equal to House BL. These are the contracts of carriage between the forwarder and the shipper. The forwarder becomes the deemed carrier. *Master Air Waybill* is a document used in transportation, specifically in air shipments, issued by the air cargo carrier or its agent.
7. Dock and warehouse receipts are required for the purpose of transferring accountability when the export item is being moved from the domestic carrier towards the porter of embarkation or the warehouse. Then receipts are left on the ship like or with the forwarding agent for export. All the receipts of dock and warehouse are issued through electronic systems and these are then sent to the client, consignee or the shipper.
8. Some international inspection companies functioning in the freight industry are:
   - Bureau Veritas Group
   - Cotecna
   - Intertek
   - SGS
9. According to BIS, all exported items listed on the Commerce Control List that are not classified as per the stipulated regulation are not eligible for the purpose of obtaining the license. For this reason, a Destination Control Statement is required.
10. There are two types of labelling:
    (i) Cargo Aircraft Only Labels
    (ii) Air Shipping Labels
11. Mate's receipt is a receipt that is issued by the commander of the ship at the time of loading the cargo. This receipt serves as face evidence that goods have been loaded in the vessel.
12. Bill of Entry is more of a declaration that is done on the part of an importer or the exporter that is about exact nature, precise quantity and the value of goods that are landed or are to be shipped out.

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13. The airline booking procedure consists of different components. Airline reservation systems comprise of numerous procedures, such as airline schedules, fare tariffs, passenger reservations and ticket records. The distribution works within their personalized reservation system. It also pushes out information to the Global Distribution System (GDS).
14. The data for inventory is maintained and imported through the process of scheduled distribution containing standardized interfaces. Inventory control is the primary function of the inventory management.
15. SITA or Société Internationale de Télécommunications Aéronautiques was founded in February 1949 by eleven airlines in order to bring about shared infrastructure cost efficiency by combining their communications networks. 16. There are numerous advantages of SITA. These are as follows:
    - Increase operational efficiency and reduce cost
    - Multi-supplier integration and management
    - End-to-end service management
    - Increased visibility and control
    - Comprehensive and flexible solution

4.12 QUESTIONS AND EXERCISES

Short-Answer Questions

1. Write in brief about CE and its role.
3. What is a warehouse receipt and where is it required?
4. What are air-shipping labels and how are these managed in cargo?
5. State the use of a dock receipt.

Long-Answer Questions

1. Explain SITA and how it helps in managing the infrastructure of airlines and IT.
2. Discuss the significance of Air Waybills in documentation.
3. What is a shipping agreement and what are its terms and conditions?
4. Discuss destination control statement and its significance.
5. What is air cargo documentation and what all are required to fulfil the requirements?
6. Analyse the various conditions of contract.

UNIT 5 AIR CARGO FREIGHT RATES

NOTES

Structure

5.0 INTRODUCTION

Air freight services are the best means of shipping goods quickly over long distances. Additionally, it helps in delivering goods that are time-sensitive and perishable. As per the information from various sources, air freight is said to be around 0.5 per cent of the entire international cargo. However, it also accounts for more than 30 per cent of the shipment value. This also includes aerial transport options, combination freight options and grade planes.

From the view of a potential shipper, there are four supplier categories in which the air cargo can be segregated into:

- Integrators or International Express Companies
- Freight Forwarders
- Couriers or International Courier Firms
- Postal Companies

The real air transport is outsourced by the afore-mentioned suppliers to the operators. The integrators here are an exception as they operate in-house fleet for providing their own transport requirements and for the purpose of outsourcing. With the freight forwarding service providers, there are links to traditional handlers of every kind. They are engaged in activities like booking, contract and processing of more than 80 per cent of the international aerial cargo consignments. They are effectively able to manage, compile and customise the necessary supply chains of the cargos for their customers.

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Supply chain generally consists of five primary steps:

- Shipping (assembling shipment, readying the transport and ordering it)
- Forwarding-out (pricing, booking and preparation of shipment)
- Transport
- Forwarding-in (picking the shipment documents)
- Consignment (accepting shipment, unpacking and inspection)

The most essential thing while planning for the shipping of goods is packing, labelling and carrying out the necessary documentation as per the compliances. Efficiency in delivery of the goods along with the timeline and safety too are important aspects. Offering reasonable or cost-effective rates gives a leverage to one airline over another. Flying cargo involves other costly operations that are not characteristic of transporting passengers.

This unit explains many factors which influence air cargo transportation costs such as transportation mode, distances involved, cargo characteristics and shipper/carrier cost and rate basis i.e. type of rate, and the unit of measure on which it is computed.

5.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Identify the determinants of air cargo tariff
- Explain the competition and value of services
- Discuss the concepts of chargeable weight, volume weight and dimensions
- Enumerate the role of voyage and time charters
- List the major air cargo liners of the world
- Examine the role major air cargo craft and their features
- Discuss charges collect (cc) shipments and prepaid (pp) shipments
- Explain the concepts of payments (mode), exchange rates, conversion, insurance, claims, etc.

5.2 AIR CARGO FREIGHT RATES: TARIFF DETERMINANTS, COMPETITION AND VALUE OF SERVICE, CHARGEABLE WEIGHT, VOLUME WEIGHT & DIMENSIONS

In this section, we will have a look at the concepts which affect the air cargo freight rates.

5.2.1 Freight Rate

A freight rate is referred as the pricing of certain cargo that is delivered from one given point to another or from the arrival point towards its destination. The price, however, is determined by varying factors such as the mode of transport (aircraft, train, truck or

Freight rate: It is referred as the pricing of certain cargo that is delivered from one given point to another or from the arrival point towards its destination.

a ship), the weight of the cargo and the distance to delivery destination. It is to be observed that numerous shipping services, especially air carriers use dimensional weight for the purpose of calculating the price and take into consideration both weight and volume of the cargo.

Factors that Influence Freight Rates

1. **Cost of Merchandise**: Freight rates vary largely based on the cost of merchandise that is transported from the starting point to the final destination. It is essential for the importers and exporters to be prepared for the factors that influence the freight rates. This is for the purpose of formulating a viable business plan. Here, it is essential to understand that freight rates are often controlled by organization who influence the freight forwarded charges. Nonetheless, there are slight deviations that can be explained to freight forwarder. It is possible that the importers and exporters ask for freight quotes for the purpose of evaluating the total cost of every shipment. The reports that are obtained are useful for the purpose of creating consolidated charges in a precise manner.
2. **Fuel Charge**: The cost of the fuel is one of the foremost important determinant of freight rates. To be able to transport commodities from one location to another, the first need is that of fuel that should be complete with the freight forwarders. However, there is always a fluctuation in fuel costs and due to this it is difficult to calculate prospective freight rates. It is essential that freight forwarders cover the fuel costs and maintenance charges of their vehicles. Additionally, the charges should also be able to cover for the salary of employees working within the company. On the other side, huge freight forwarders are able to generate revenue even with slight profit margin per package. This is done with the accrued freight charges.
3. **Weight of Merchandise:** This is yet another factor governing the freight charges for importers and exporters. Before shipping, the merchandize is weighed so that accurate freight cost is calculated. Often times, this information is displayed on the websites so that importers and exporters are able to ascertain the amount that they will incur for shipping. It is to be understood that heavier shipment equals to higher freight rates. Another thing to remember is that if the shipment is more likely to take up extra space additional fees is to be paid. Moreover, the determination of weight of merchandise not only helps in finding out exact charges but also indicate whether the party involved has exceeded the limit or not. It is to be noted that trucks, ships and airplanes have a certain maximum capacity that is to be followed. It is not possible to surpass the said capacity as it can be dangerous.

   The freight forwarding company should be following the rules and regulations as mentioned by the regulatory authority. If any of the deviations are discovered by the authority, then they will be suspended or liable for huge penalty. Additionally, approved freight rates should be followed by the service providers.
4. **Size of Cargo:** It is the size of the cargo that influences the rates importers and exporters should pay. Some cargo may require more space to be accommodated on-board. For this, the forwarding companies should be able to include the details of size within the cargo to precisely calculate the price. To work things

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out accurately, a guide is provided to the forwarding companies. The cargo should not exceed the maximum size; if need be, the client may be asked to divide the cargo. Under this situation, they may need to pay separately for the two cargos. Another essential thing to keep in mind is the distance between the arrival point and the destination. Forwarding companies calculate the cost of the goods from one point to another based on freight charges. If there are goods that are to be delivered to farther destinations, then it logically means more fuel charges. This again makes the transportation charges higher. However, there may be some cases where the charges to deliver to short distances is also steep. This happens when the transportation is required to travel a bit farther with a less load capacity of the cargo. It can now be clearly understood that freight weights changes on varying conditions and factors of the cargo.

5. **Delivery Time**: There is another dynamic thing that needs to be considered i.e. the time of arrival of cargo. Commodities that are non-perishable or that do not expire are transported via ships. However, it takes time to reach there due to the distance covered and it takes time to deliver through sea. However, it does not work for cargo that requires immediate delivery or timely delivery, especially for time-sensitive goods. These goods cannot be stored for a long time. Freight rates for these commodities are higher due to the perishable nature of the goods. Proper storage during the delivery time and timely delivery is done for these kind of goods.

6. **Mode of Shipment:** Air Transport Association in case of air freights determines the prices of shipping. They provide official rates policy to air shippers that work with cargo tariff. The costs related to freight are calculated as per the consultation between the transport association and the local authorities that determine the pricing scenario. These are all due to inter-governmental pacts in different countries. When the transporters are changing prices or willing to do so they need to first seek the approval of the Air Transport Association on the international level and the related government as per the residential status. There are requirements that need to be filed prior to beginning the approval process.

Essentials points to be kept in mind

- It is essential to know that people willing to transport specific goods or cargo should be able to identify the factors that influence the freight charges.
- It is essential to be aware about the factors affecting freight rates and regulations in advance especially with regards to the businesses that are engaged in transporting commodities within and outside the country.
- Integration with freight forwarding companies is advantageous as it helps in reaching out to higher level of customer base and get good pricing for shipping.
- Customers rely on shippers who have a huge network as this assures them that their goods will be securely handled and reach the destination on time.
- Keeping updated software should be the priority for the purpose of helping customers with bookings and tracking and the airlines, who will be able to process the orders quickly.

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5.2.2 Air Freight Shipping

Air cargo freight rate refers to the rate of transporting goods in bulk through the airways. Global importers and exporters are more inclined to use air cargo as they need to get the goods to their destination rapidly and through reliable means. While 90.5 per cent is shipped through ocean, air freight delivery is faster and helps cut the shipping time by 20-30 days compared to the ocean. Air freight generally takes only 3 days for shipping.

It is essential to notice that there is a huge difference between air freight and express freight. Express freight is handled by one provider that is responsible for taking care of entire shipment lifecycle that includes door-to-door delivery within 5 days. These shipments are smaller as compared to air freight. International shipments are larger and multiple carriers may be involved during the entire process of shipment.

5.2.3 Competition and Value of Service

Air freight usage is growing slowly, with less than 1 per cent growth in 2015 among the world's top freight forwarders. The International Air Transport Association (IATA) said that air freight growth only hit 2.2 per cent in 2015, down from 5 per cent in 2014. One reason for this is the increased reliance on ocean freight, which is growing more and more reliable. Ocean freight has been getting cheaper, driven by massive freight over-capacity, with up to 75 per cent declines on key routes. On the other hand, air passenger travel has grown strongly, pushing carriers to create more and more planes. As a result, there's more belly cargo space – space under the plane to store air freight. However, this means that less than half of the air freight capacity is being used.

As far as the overall air shipments field is concerned, we can see that most companies that have shipment importing needs do everything in their power to take advantage of cheap ocean rates and ocean freight, leaving only the most urgent shipments for air freight.

5.2.4 Tariff Determinants of Air Freight

When it comes to air freight, weight and volume are key factors. Air carriers will charge by either volumetric weight (also known as dimensional weight) or actual weight, depending on which is more expensive. The global rule of thumb is to calculate the volumetric weight is to multiply the item's volume in cubic meters by 167. For example, the volume of a package that has width 40cm, height 40cm and length 40 cm is .064 (the product of all sides divided by one million). On multiplying this by 167, you get a volumetric weight of 10.67 kg.

If the volumetric weight exceeds the actual weight of the product, the volumetric weight becomes the chargeable weight.

Chargeable Weight, Volume Weight and Dimensions for Air Freight Shipments

Air freight shipping are done on the basis of the Actual Weight (Gross Weight) or the Volumetric (also called Volume or Dimensional) Weight of the shipment, whichever is the greater. The methodology is using estimated weight that is calculated as per the

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dimensions such as length, width and height of a package. It is to be remembered that shipments are depicted in the order of L x W x H.

Volume weight/dimensions is all about large items with light weight that take up more space within a small aircraft as opposed to heavy items. For this reason, airlines only charge as per chargeable weight. It is commonly used throughout the freight forwarders, domestic carriers and brokers for the purpose of calculating the air freight and domestic charges.

If one wants to understand the formulae of volume/dimensional weight without details, then keep in mind the following points:

- The formula for calculating the volume/dimensional weight for all commodities is 166 cubic inches per pound or 6000 cubic centimeters per kilogram or 366 cubic inches per kilogram.
- Multiply the length by the width by the height to obtain the cubic inches, then:
  (i) To obtain the dimensional weight in pounds using inches, divide the cubic inch result by 166.
  (ii) To obtain the dimensional weight in kilograms using inches, divide the cubic inch result by 366.
  (iii) To obtain the dimensional weight in kilograms using centimeters, divide the cubic centimeter result by 6000.

Following terms need to be understood:

Chargeable Weight: Chargeable weight is an equilibrium point where the actual weight and volume weight of cargo balance out for the airline. This is to say that chargeable weight is the actual weight or volume weight, whichever is higher. However, one thing to observe is that when the actual weight is greater than that of the equilibrium point, all the charges of air freight are billed as per actual weight.

Chargeable weight: It is an equilibrium point where the actual weight and volume weight of cargo balance out for the airline.

Volume/Volumetric/Dimensional Weight: Cargo weight based on dimensions of the cargo as discussed in the previous paragraphs.

Actual Weight: Actual weight of the cargo weighed on a scale

- Lb or lbs: pounds
- Kg or kgs: kilograms
- Cft or ft^3: cubic feet
- Cbm or m^3: cubic meters
- Tonne or mt (metric ton): 1,000 kgs / 2,204.6 lbs

Basic Conversions to be kept in mind:

1 inch = 2.54 centimeters (cms)

1 lbs = 2.20462 kgs

Imperial shipping factor examples:

167 $in^3/lb = 10.4\ lb/ft^3$

Metric shipping factor examples:

$5000\ cm^3/kg = 200\ kg/m^3$

$6000\ cm^3/kg = 166.667\ kg/m^3$

$7000\ cm^3/kg = 142.857\ kg/m^3$

Note: All dimensions and weights are rounded to the nearest whole number.

Combining dimensions in inches and weight in kgs: (L x W x H)/366 (This is commonly done in U.S. exports since dimensions are provided in inches but charges for air freight are always in kgs)

How to Calculate Volumetric Weight to determine the Chargeable Weight as per the Air shipment?

Let's look at some examples to understand the concept of chargeable weight in a better manner.

Example 1 – Actual Weight is Greater than Volume Weight:

Let us take for instance, a company that is shipping cargo from Los Angeles to Shanghai. Assuming the cost of the shipment and weight to be as follows:

5 boxes/cartons, each weighing 30kgs, and each measuring 50 x 40 x 40 cms / 19.685 x 15.748 x 15.748 inches.

Actual Gross Weight = 5 boxes x 30kgs each = 150 kgs

Volumetric Weight in kgs using centimeters = (50 x 40 x 40cm) x 5 boxes / 6000 = 67kgs

Volumetric Weight in kgs using inches = (20 x 16 x 16) x 5 boxes / 366 = 67kgs

Result: 150 kgs is greater than 67 kgs, so the Chargeable Weight will be 150 kgs which, in this case, is the Actual Weight.

Example 2 – Volume Weight is Greater than Actual Weight:

Let us take another example, same scenario with regard to shipment destination but different weight, measurement and cargo.

3 boxes/cartons, each weighing 10kgs, and each measuring 50 x 40 x 40 cms / 19.6 x 15.7 x 15.7 inches.

Actual Gross Weight = 3 boxes x 10 kgs each = 30 kgs

Volumetric Weight in kgs using centimeters = (50 x 40 x 40cm) x 3 boxes / 6000 = 40 kgs

Volumetric Weight in kgs using inches = (19.6 x 15.7 x 15.7) x 3 boxes / 366 = 40 kgs

Result: 40kgs is greater than 30kgs so the Chargeable Weight will be 40kgs which is also the Volume Weight.

Now for your knowledge, following are the carriers with their own criteria that you should be aware of:

- **DHL**: (L cm x W cm x H cm)/5000 or 4000 depending on certain import/ country criteria

- **FedEx**: (L cm x W cm x H cm)/6000 (new) or/5000 (old, still used in Asia) for international shipments, (L cm x W cm x H cm)/7000 for domestic shipments
- **UPS**: (L cm x W cm x H cm)/6000 or/5000 depending on certain import/ country criteria
- **Canada Post** (L cm x W cm x H cm)/6000 or (L in x W in x H in)/166 Inches/ Pounds
- **FedEx Express & UPS:** (L in x W in x H in)/139
- **FedEx Ground & UPS Ground**: (L in x W in x H in)/139

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5.3 CURRENCIES AND ROUNDING OFF PROCEDURES; VOYAGE AND TIME CHARTERS

The first thing to understand is that even with the given advantages, air cargo is relatively expensive. There are a few factors in air freight that need to be evaluated as these always influence the shipping scenario. Things like transport, handling, documentation, customs formalities are few of the factors that need to be considered while analysing the cost and the demands of the cargo delivery to be done within the stipulated time.

Factors to Consider for Evaluation of Freight Cost

Before any evaluation of freight cost, it is essential to consider certain essential facts. The first thing in priority are the urgent orders. If there is any delay in transit, then it will result in losing a client. So, time and urgency are two inter-linked factors. Another thing is related to air freight and speed without compromising on quality. If the cargo is under the impression that losing one customer may not impact the business, then they are wrong, as every single customer is important for the reputation of the business of the air cargo liner.

There are a few more things that need to be considered prior to freight calculation process. These are as follows:

- Time bound delivery stipulated
- Whether it is the first order from the client
- Size of the freight

Elements of Air Freight

(a) **Volume:** It is essential to remember that air freight pricing depends upon the space occupied by the goods that are transported. The calculation for the volume is as meters by multiplying these in length, width and the height. The result is then multiplied by 166.6666 (do not round this figure). After the multiplication, the result is either
- Kept as it is (e.g. 125.00 is kept unchanged) or
- Rounded up to the next 500 kg (125.6 will become 126.00)
- Decimal figure less than 500 g is rounded up to 500g (125.4 becomes 125.00)

Check Your Progress

1. What do you mean by freight rate?
2. List the factors that influence the freight rates.
3. How is Chargeable Weight calculated for Air Freight Shipments?
4. Name some of the carriers with their own criteria for calculating the chargeable weight.

(b) **Gross Weight:** This is the total weight as per kilogram weight of the consignment. It is inclusive of packaging materials too. However, it is essential to understand that net weight is not to be included in air freight. For instance, in Germany, it is only required for export declaration. In such a scenario, the net weight is posted to the national statistics office. Some surcharges on air freight is used for charging on gross weight. However, this changes with practice; numerous airlines are changing their means of operation and they charge according to the chargeable weight.

(c) **Chargeable Weight:** This is the weight in which air freight rate or even other rates are included or applied. The gross weight and the volume are compared and the higher one is taken into account for levying chargeable weight.

(d) **Air Freight Rate:** As explained earlier, air freight is based on weight of the cargo. The ratings are decided as per IATA price table that is defined for each category. All information related to it is represented in the TACT book. However, the rate is generally not meant for billing purpose. The consignee is to pay for the air freight. It is to be understood here is that one house bill is covered by one master bill. The air freight agent is the one taking care of the master bill as it is addressed to them.

(e) **Standard Airline Surcharges:** The standard surcharges are as follows:

- Fuel Surcharge
- Security Surcharge (also called Risk Surcharge or War Risk Surcharge)
- AMS Surcharge (Automated Manifest Service)
- Screening Surcharge (or X-Ray Surcharge): This is levied when the shipper falls under the classification of unknown shipper category and it is applicable with the condition of screening as demanded by the shipper to the airline.
- Dangerous Goods Surcharge: This charge differs from airline to airline and applicable only if the cargo is classified as hazardous.

Pre-Export Charges

Charges vary with forwarders and it fluctuates as per the prevailing condition. The charges levied for export are as follows:

1. **Export Declaration**: It varies as per the country of export. For instance, in Germany, a common practice is that of a fixed amount with regard to declaration of the HS code or Harmonized System code. This varies with each country.
2. **Pick up:** This rate is as per the chargeable weight. Air freight volume calculations are as per the transport.
3. **Haulage:** This is when the freight is not flying from the airport that is located close to the forwarder, but further away. In this scenario, it is essential to transfer it by lorry towards the departure airport.
4. **Screening charge or X-Ray charge**: Each forwarder has a list of their own tariff along with security regulations for air freight that are very strict.
5. **Handling:** Freight is first stored in a warehouse; this is one of the mandatory process regarding handling of goods. These are checked for proper labels and

only then tendered to the airline. These are charged as per single price instead of price per kilo.

6. **Repackaging:** If any damage is found to the packaging, the warehouse will need to better the condition in order to avoid rejection on the final stage of transportation by the airline.
7. **Customs Inspection**: Authorities can inspect the contents of the boxes or goods. There is a need to obtain the customs clearance receipt for the given amount. However, the process is complex and tedious and takes as much as two weeks to reach at the forwarder's desk.

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Incoterms: These are the terms of sale that request for charges that are to be paid.

Before Requesting a Quotation

Incoterms: These are the terms of sale that request for charges that are to be paid. If all charges are paid to the destination airport, then the customer should ask for the breakdown of all the charges. If door delivery charges are to be paid without the inclusion of customs clearance, then it needs to be done first. The freight agent needs to request for charges from abroad.

- Number of pieces in accordance with the Export Declaration
- Dimensions and total gross weight: the dimensions are rounded off. Only total gross weight is to be considered.
- Location of the freight: the distance becomes the determinant for pick up charges.
- Deadline (if any): The forwarder should be aware about the dedicated transport in case it has to be organized keeping in mind the deadline.
- Date and Time: Specifications related to pick up are needed along with the time frame. It is essential to determine the regular pick up timings and it should be requested from the airlines. One should find out if the freight is stackable and whether the charges changeable or they are expected to increase.

Exchange Rate, Conversion, Currencies and Rounding Off Procedures

International air transport depends on the ability to establish tariffs, use the service of interline partners and to settle amounts due for interlining traffic in the agreed settlement currency. In order to establish selling fares and to perform interline invoicing and settlement, airlines must have rates of exchange between world currencies. Rules have been developed and maintained so that exchange rates are monitored against base currencies such as USD, GBP, EURO.

IATA Exchange Rates published by IATA are the sole source to support interline billing and establish tariffs. The rates can be in the form of call day rates, five day rates and monthly mean rates. Additionally, there is also the IATA Rates of Exchange which provides monthly updates of IATA currency rates of exchange used by the industry for fare/rate construction. They are built based on the average of the five banking days ending on the 10th of each month.

ICER provides daily updates of exchange rates (sometimes referred to as BSR) to be used when converting fares, taxes, and fees to alternate currencies of payment. ICER is the official source for international payment currency conversions used by the industry for pricing and ticketing.

Currencies

Another important factor that needs to be considered while requesting a quotation is the currency. This is very crucial in international shipping. Many a times, the quotation from a specific country might not be in their national currency. For example, a quote from China will not necessarily always have a quote in Yuan, it might be in US dollars, and therefore very different in value. This is why it is important that the currency mentioned in the quotation and contract is very clear and specific.

Before 1984, the IATA floated an idea of universal unit currency, but there were not many takers. Now the, IATA has special rules for the conversion of currencies based on the fluctuating foreign exchange rates which are mentioned in the TACT.

Rounding Off Procedure

The calculations of weight and air freight rates along with the currency conversions will not always result in a round figure and there are several chances of reaching a number with different decimals. In such cases to make payments and the calculation procedure less complex. The TACT book provides the nearest rounding off rules related to currencies as well as weight of the cargo involved.

5.3.1 Voyage and Time Charters

These concepts are related to ocean shipping. Cargo may be owned by the charter in some special cases and they may employ a shipbroker for finding a ship for delivering cargo at a given price or freight rate. Freight rates may be levied on the cost of a per ton basis over a certain route.

Worldscale is used to calculate freight rates for oil tankers and product carriers. It is a tanker chartering tool, its principle is to provide the ship-owner with the same net return per day irrespective of voyage performed for the Worldscale Standard Vessel at WS100. These are determined as per the duration of the charter. It is possible that the charter is still included without any cargo for taking the vessel on charter within a specific period that comes from the owner and then it is traded with the ship for carrying the cargo at a given profit that is above the hire rate. It may find out a means of making profit through the means of re-letting the ship to other charters.

It all depends on the type of ship and the charter that has a standard contract form. The form is referred to as charter party that is able to record the precise rate, duration and the agreement terms between the charterer and ship owner.

Time Charter Equivalent is a generic shipping industry performance measure that is used for the purpose of comparing with period-to-period changes in the performance of the shipping company even with the changes that come with the mix charter types.

1. Voyage Charter

A voyage charter is the hiring of a vessel and crew for a voyage between the loading port and discharge port. The charter is paying the vessel owner as per ton and on a lump-sum basis.

Voyage charter: It is the hiring of a vessel and crew for a voyage between the loading port and discharge port.

The owner is to be the one paying the port costs that would exclude the stevedoring (dockworker), crew costs and fuel costs. The payment for utilizing the vessel is referred to as freight. A voyage charter should be able to specify the period for loading and unloading the cargo, this is often called laytime.

If for any reason, laytime exceeds, then the charter must pay demurrage or a late fee payment charge for not being able to meet the timely delivery contract. If laytime is saved, then the charter party will require the ship owner to pay out the despatch to the charterer.

A Contract of Affreightment is similar to voyage charter. However, cargoes are to be carried within stipulated period of time on a special route. The frequency of cargoes is already decided that may involve multiple ships.

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Time charter: It is the hiring of a vessel for a specific period of time; the owner still manages the vessel but the charterer selects the ports and directs the vessel where to go.

2. Time Charter

A time charter is the hiring of a vessel for a specific period of time; the owner still manages the vessel but the charterer selects the ports and directs the vessel where to go. The charterer pays for all fuel the vessel consumes, port charges, commissions, and a daily hire to the owner of the vessel.

A trip time charter is short time charter that is already agreed for a specified route. Comparatively, it is different from the standard time where it is free to engage the vessel within specific trading areas.

Major Aspects and Features of Voyage Charter

(a) **General:** Under this category, the charterer pays for the use of cargo space in the ship either one or more than one voyage. In such cases the earning of the owner is based on the quantity of the cargo that is loaded. This can be a lump-sum amount regardless of the cargo quantity.

(b) **Charter Party Agreement**: This should include the following:

  (i) The Operator should be able to read the contract and have good communication skill to work with the charter party agreement. He/she should be able to seek the attention of manager in case of any point clarification.

  (ii) In cases where client and/or broker is not able to forward the charter party, the Commercial Ship Operator should be able to request the information related to the necessary voyage.

  (iii) A voyage file unique to each charter party for each ship should be maintained by the Operator. Electronic voyage files should be created and stored within the company's messaging system.

  (iv) The voyage files contain unique identification and located in the post fixture department. These files should be available in the regional office with all outstanding items indicating that voyage has been closed. After this, they must be archived.

(c) **Instructions to Master**

  (i) The Operator should be able to provide all the details to the Master by email or telex as soon as they are received after the completion of charter party negotiations. In some cases, the information will serve as a recap

and/or charterer's voyage orders. The Operator may need to extract the relevant information from the charter party. Details of the following are needed:

- Charterer
- Laydays
- Ports
- Tendering of Notices
- Cargo
- Load/Discharge Rates
- Agents
- Bunker Arrangements
- And any other information which could affect the prosecution of the voyage.

(ii) On receipt of the charter party, the Operator should check details of the charter party and find out any material differences with the client before dispatching the copy of the charter party to the Master.

(iii) In cases where the charter party is not present, the Operator is responsible for the purpose of forwarding the information that is received from the clients/charterers. If the Master is advised of any requirements of the charter directly by the charterer or by their agent, the Master is required to convey these requirements to the Operator.

The aforementioned details are to be filed in the voyage file.

(d) **Communications with the Vessel**

The Operator takes responsibility for routine communications with the Master for post fixture operation matters in compliance, the charterer's voyage orders and other relevant requirements. The specific means of communication and requirement for communication depend on how urgent the situation is.

(e) **Cargo**

The Operator, by communicating with the Master, shall monitor that:

- The cargo spaces have been accepted by the shippers
- The correct amount of cargo agreed under the charter party has been loaded/discharged
- There are no discrepancies in the bill of lading or shore to ship's weights
- There are no problems unresolved prior to departure of the ship

If there are any problems in commercial cargo matters then it should be directly addressed to the Operator who will be able to communicate it to the Master through e-mail, telephone or telex as per the convenience and availability of the means of communication. Wherever required, the technical manager is to be involved. Communications between Master and Operator are vital; it should be recorded in the voyage file. The Operator should be able to engage the services of the necessary party in compliance with the cover arrangements of the client.

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Any cargo following papers should be filed within the voyage file. Another thing to remember is that the responsibility of monitoring of any kind and the stowage of cargo is vested with the Master. However, the Operator should be able to make it clear that the vessel is complying with the charter party as per the requirements:

(f) **Freight Collection**

The Operator is responsible for the freight invoice and its collection as affectively as possible. The Manager should be informed of freight collection problems if it arises.

(g) **Claims and Expenses**

The Operator is responsible for claims and expenses applicable under a voyage charter. These are compiled with and submitted to the charterers in the most efficient manner. This includes claims for demurrage/dispatch, charterer's expenses, cargo heating, hold cleaning, shifting, etc.

The Operator will follow each claim closely with his assistance to settle all the outstandings recovered from the charterers. If necessary, the Operator should seek the services of the client's end to assist with collecting outstandings. The Manager should be advised of any particular problems encountered in this area.

(h) **Agency**

The Operator will be responsible for appointing the agents to all the ports that the vessel is to call to under the charterer's voyage instructions. These are either nominated by the charterer or the operator is given the power to select the agents in order to provide the cost analysis and other services, based on the client's preferred agency lists and/or past experience.

The Operator is responsible for ensuring that the agents perform their function in the most cost-effective and efficient manner and should bring any underperformance reported to the Manager, and if needed, it should include the clients and charterers.

The Operator should go through the disbursement accounts of the operator when received. This should be done to ensure that voyage and running costs are properly handled. All the expenses of charterers should be properly billed.

Time Charter

1. **General**: There is a difference in the types of voyage charter and the ownership, places, crew and equipment that are disposed to the charterer who has complete control of the vessel. This also includes bunkers, handling operations, port charges and other such incidents that would be otherwise handled by the owner in the voyage charter. When it is related to time charter, the owner hires based on the time period of charter or as per dead-weight ton/month.
2. **Charter Party**: As soon as the fixture note is received, the operator ensures that Master is able to provide with the relevant information to be able to comply the terms related to contract and for the purpose of working out the time with charterers. The Operator should carefully take note of the charter period, exclusions of cargo, limitations related to trading, performance of warranties and the rate of hire along with frequency of payment.

3. **Hire**: The Operator is responsible for creating invoice for the hire as per the regulations of charter party and it should be collected timely. Any problems with non-payment of hire must be notified to the Manager.
4. **On/Off Hire Surveys**: The Operator should be able to arrange for on-hire and off-hire surveys as per requirement while ensuring the client's interests. He should also make efforts to reducing the costs of these surveys through the process of sharing them with the charterer or by coinciding the on-hire survey with the previous charter off-hire survey.
5. **Speed and Performance**: Speed and performance are essential to the charters and operators. This should be ensured by the master who should be fully aware about the provisions and the warranties of charter party. The operator has to ensure speed and performance that should be monitored and recorded to be able to compile claims against charters. It will be the same for checking and to counter the claims received from the charterer.
6. **Charter Reconciliation:** The Operator should be able to ensure that the time charter reconciliation is carried out immediately and accurately. This includes on/off hire survey fees, delivery and re-delivery bunkers, performance claims, owner's port expenses, off-hire claims and other such matters. The Operator should engage the services of the clients as per the requirement to be able to assist when needed.
7. **Off-hire**: The Operator should be working closely with the Master and the technical manager to ensure that down time for owner's requirements is kept to an absolute minimum. This will include liaising with crew changes, maintenance, stores delivery and other such matters.
8. **Claims:** The Operator is responsible for both compiling and countering any claims during the period of the time charter. The Manager must be consulted in the event of any disputes or difficult claims.

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5.4 MAJOR AIRCARGO CRAFTS AND THEIR FEATURES

Major Air-Cargo Liners of the World

There are several air-cargo liners in the world. Some of the major ones include Fedex express, Cargloux, Lufthansa Cargo, Emirates Skycargo, DHL Aviation, UPS airline etc.

Major Aircargo Crafts and Their Feature

Aircraft may be classified by different criteria, such as lift type, aircraft propulsion, usage and others.

Aircraft Configuration

(a) Wing Types

Aircrafts are categorized as per the configurations; one such is the wings:

- Monoplanes, with a single wing (that is, on either side of the fuselage)

Check Your Progress

5. What are the essential factors for evaluation of Freight Cost?
6. List some pre-export charges.
7. What is voyage charter?
8. Explain charter party agreement.
9. What role does the Operator play in communications with vessel?
10. Explain on/off-hire surveys.

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- Biplanes, with two wings, one atop the other triplanes and quadplanes
- A tandem-wing craft has two wings, one placed forward of the other

The wing planform is the shape the wing forms when seen from above. Delta wings are formed in the shape of the Greek letter delta (Ä); they are triangular wings lying at roughly a right angle to the fuselage. The supersonic Concorde featured delta wings.

Swept wings are angled, usually to the rear and often at an angle of about 35°. Forward swept wings also are used on some research craft.

The wings of some aircrafts are adjusted in the flight for the purpose of attaching at different angles to the fuselage; these are called variable incidence wings. Variable geometry (swing) wings can vary the sweep (i.e., the angle of a wing with respect to the plane perpendicular to the longitudinal axis of the craft) of their wings in flight. These two types have primarily military applications, as does the oblique wing, in which the wing is attached at an angle of about 60° as an alternative to the standard symmetrical wing sweep.

Another configuration limited to military craft is the so-called flying wing, a tailless craft having all its elements encompassed within the wing structure (as in the Northrop B-2 bomber). Unlike the flying wing, the lifting-body aircraft (such as the U.S. space shuttle) generates the lift in part or totally by the shape of the fuselage rather than the wing, which is severely reduced in size or is altogether absent.

(b) Takeoff and landing gear

Another means of categorizing aircraft is by the type of gear used for takeoff and landing. In a conventional aircraft, the gear consists of two primary wheels under the forward part of the fuselage and a tail wheel. The opposite configuration is called a tricycle gear, with a single nose wheel and two main wheels farther back. An aircraft with two main undercarriage assemblies in the fuselage and wing tip protector wheels is said to have bicycle gear.

Large aircraft, such as the Boeing 747, incorporates multiple bogies (several wheels arranged in a variety of configurations) in their landing gear to spread out the weight of the aircraft and to facilitate stowage after retraction in flight.

A few aircraft use skis or other structures to allow takeoff from or landing in water. These include floatplanes, which are fitted with pontoons for operation on water; flying boats, in which the fuselage also serves as a hull for water travel; and amphibians, which are equipped to land on and take off from both land and water.

The demands placed on naval planes used on aircraft carriers require a heavier structure to withstand the stresses of catapult launches and landings abruptly terminated by arresting gear. Landing-gear mechanisms are also reinforced, and a tail hook is installed to engage the arresting gear, a system that is also used for land-based heavy military aircraft.

The mode of takeoff and landing also differs among aircrafts. Conventional aircrafts gather speed (to provide lift) on an airfield prior to liftoff and lands on a similar flat surface. Numerous means have been used in the design of aircraft intended to accomplish short takeoffs and landings (STOL vehicles). These range from optimized design of the wing, fuselage, and landing gear as in the World War II Fieseler Storch

(which featured Handley Page automatic slots, extendable flaps, and a long-stroke undercarriage) to the combination of generous wing area, large flap area, and the use of large propellers to direct airflow over the wing as in the prewar Crouch-Bolas, or even such specialized innovations as large U-shaped channels in the wings as with the Custer Channel Wing aircraft. Vertical-takeoff-and-landing (VTOL) vehicles include the helicopter, tilt rotors, and 'jump jets,' which lift off from the ground in a vertical motion. Single-stage-to-orbit (SSTO) aircraft can take off and land on conventional runways but can also be flown into an orbital flight path.

(c) Propulsion systems

The engines used to provide thrust may be of several types:

1. **Reciprocating engines**
   - Often, an internal-combustion piston engine is used, especially for smaller planes. They are of various types, based on the arrangement of the cylinders. Horizontally opposed engines employ four to six cylinders lying flat and arrayed two or three on each side. In a radial engine the cylinders (ranging from 5 to as many as 28, depending on engine size) are mounted in a circle around the crankshaft, sometimes in banks of two or more. Once the dominant piston-engine type, radials are now in only limited production; most new requirements are met by remanufacturing existing stock.
   - Four to eight cylinders may be aligned one behind the other in an in-line engine; the cylinders may be upright or inverted, the inverted having the crankshaft above the cylinders. V-type in-line engines have the cylinders arranged in banks of three, four, or six.
   - An early type of engine in which the propeller is affixed to the body of the cylinders, which rotate around a stationary crankshaft, is the rotary engine. Modern rotary engines are patterned after the Wankel principle of internal-combustion engines.
   - Automobile and other small engines are modified for use in homebuilt and ultralight aircraft. These include two-stroke, rotary, and small versions of the conventional horizontally opposed type.
   - Early in the aviation history, most aircraft engines were liquid-cooled, first by water, then by a mixture of water and ethylene glycol, the air-cooled rotaries being an exception. After Charles Lindbergh's epic transatlantic flight in 1927, a trend began toward radial air-cooled engines for reasons of reliability, simplicity, and weight reduction, especially after streamlined cowlings (covers surrounding aircraft engines) were developed to smooth out air flow and aid cooling. Designers continued to use liquid-cooled engines when low frontal drag was an important consideration. Because of advances in engine cooling technology, there has emerged a minor trend to return to liquid-cooled engines for higher efficiency.

2. **Jet engines :**

   The gas turbine engine has almost completely replaced the reciprocating engine for aircraft propulsion. Jet engines derive thrust by ejecting the products of combustion in a jet at high speed. A turbine engine that passes all the air through the combustion chamber is called a turbojet. Because its basic design employs

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rotating rather than reciprocating parts, a turbojet is far simpler than a reciprocating engine of equivalent power, weighs less, is more reliable, requires less maintenance, and has a far greater potential for generating power. It consumes fuel at a faster rate, but the fuel is less expensive. In simplest terms, a jet engine ingests air, heats it, and ejects it at high speed. Thus in a turbojet, ambient air is taken in at the engine inlet (induction), compressed about 10 to 15 times in a compressor consisting of rotor and stator blades (compression), and introduced into a combustion chamber where igniters ignite the injected fuel (combustion). The resulting combustion produces high temperatures (on the order of 1,400 to 1,900 °F [760 to 1,040 °C]). The expanding hot gases pass through a multistage turbine, which turns the air compressor through a coaxial shaft, and then into a discharge nozzle, thereby producing thrust from the high-velocity stream of gases being ejected to the rear (exhaust).

A turbofan is a turbine engine having a large low-pressure fan ahead of the compressor section; the low-pressure air is allowed to bypass the compressor and turbine, to mix with the jet stream, increasing the mass of accelerated air. This system of moving large volumes of air at a slower speed raises efficiency and cuts both fuel consumption and noise.

A turboprop is a turbine engine connected by a reduction gearbox to a propeller. Turboprop engines are typically smaller and lighter than a piston engine, produce more power, and burn more but cheaper fuel.

Propfans, 'unducted fan' jet engines, obtain ultrahigh bypass airflow using wide chord propellers driven by the jet engine. Rockets are purely reactive engines, which usually use a fuel and an oxidizing agent in combination. They are used primarily for research aircraft and for launching the space shuttle vehicles and satellites.

A ramjet is an air-breathing engine that, after being accelerated to high speeds, acts like a turbojet without the need for a compressor or turbine. A scramjet (supersonic combustion ramjet) is an engine designed for speeds beyond Mach 6, which mixes fuel into air flowing through it at supersonic speeds; it is intended for hypersonic aircraft.

3. Engine placement

Aircraft types can also be characterized by the placement of their power plants. An aircraft with the engine and propeller facing with the line of flight is called a tractor type. If the engine and the propeller face opposite the line of flight, it is a pusher type. (Both pusher propellers and canard surfaces were used on the Wright Flyer; these have now come back into vogue on a number of aircraft. Canards are forward control surfaces and serve to delay the onset of the stall. Some aircraft also have forward wings, which provide lift and delay the stall, but these are not control surfaces and hence not canards.)

Jet engines are variously disposed, but the most common arrangement is to have them placed underneath the wing in nacelles suspended on pylons or placed on stub fixtures at the rear of the fuselage. Supersonic and hypersonic aircraft are usually designed with the engine as an integral part of the undersurface of the fuselage, while in some special military stealth applications; the engine is entirely submerged within the wing or fuselage structure.

Check Your Progress

11. Categorize aircrafts on the basis of wings.
12. What do you mean by turbofan?
13. Define a ramjet.

5.5 SOME IMPORTANT CONCEPT OF AIR FREIGHT

Let's discuss some of the important concepts related to air freight.

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5.5.1 Charges Collect and Prepaid Shipments and Shipment Modes

Bill of lading refers to a document issued by a carrier, or its agent, to the shipper as a contract of carriage of goods. It is also a receipt for cargo accepted for transportation, and must be presented for taking delivery at the destination.

Delivery or shipment for which transportation and other charges are paid by the consignee. Also called charges collect, charges forward, or freight collect.

In prepaid shipments, the cost of the goods' shipping has already been paid for and is not refundable. Many manufacturing businesses will ship their products freight prepaid to avoid having the intended receiver pay for shipping costs.

There are several modes of payment used for air freight:

- open account
- documentary collections
- documents against acceptance
- documents against payment
- letter of credit
- confirmed letter of credit
- advised letter of credit
- cash in advance

5.5.2 Cargo Insurance

It is essential that all the carriers should be able to carry insurance that is referred to as carrier liability. However, it has limited coverage. The shippers should request cargo insurance for the purpose of protecting their goods from any damage, loss or theft during transit. A general rule is that the goods are insured while they are stored and during transit, until it reaches the buyer.

There are various types of Cargo Insurance. Cargo insurance is taken into account for international as well as for domestic transportation. It is not easy to standardize and implement control without cooperation with different countries and states, all due to the varying insurance.

With varying levels, the following categories are considered for insurance:

1. **Land Cargo Insurance**

   Under this insurance, the coverage provided is for land transport that primarily covers trucks along with other utility vehicles. Coverage aspects include theft, damages as a result of collusion and other such risks. However, this insurance is domestic and only valid within the nation and not outside it.

2. **Marine Cargo Insurance**

   This insurance is all for transportation that is either sea or through air. Transportation and goods covered includes insurance for damages from cargo loading/unloading, weather contingencies, piracies and other relevant issues.

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On a general note, the insurance is able to cover international transportation. Under this category, there are certain policies that are essential to understand. These are as follows:

(i) **Open Cover Cargo Policies:** When the insurance holder is opting for coverage against different consignments, it activates open cover cargo policies. There are two segments of this policy: renewable and permanent policy. Renewable policy is needed for the purpose of a particular value that needs to be renewed after the policy expires. Majority of voyages come under this category. Permanent policy is that which is drawn up for a stipulated period of time that permits time period for countless shipments within that period of time.

(ii) **Specific Cargo Policies:** This happens when there is a need to insure particular consignment by the company. Either an insurance company or a broker for insurance is approached for this purpose. These policies are referred to as voyage policies as they only cover shipments which fall under them.

(iii) **Contingency Insurance Policy:** In some cases, the customer is responsible for insuring goods against any damage or loss. If the customer refuses or avoids this liability, then rectification can be sought by the sellers with the help of legal system. Often this becomes too costly and at times the sellers lose the case too. Under these circumstances, sellers are often advised for opting contingency insurance that comes with a less premium rate. It is for testing and verification. Sellers can keep this information confidential to themselves.

5.5.3 Freight Claim

This is the legal claim that is demanded by the shipper or the consignee to a carrier for seeking financial reimbursement for loss or damage of a shipment. This claim is also referred to as shipping claims, transportation claims, cargo claims or loss and damage claims. This is from carrier to the consignee and the shipper to make it complete as per the compliances or with regards to Bill of Lading. The claimants are expected to file the related claim for recovering costs but excluding profits.

Filing a Freight Claim

A form is provided by each carrier that is specially used for the purpose of filing freight claims. If the following details are met with, then there is no need for the form:

- Shipment should be specified
- Specification for loss or damage type is mentioned
- Precise amount of claim must be specified
- A clear demand for payment must be present
- Shipment identification information should be included like freight bill PRO, the vehicle number, and the delivery date

The following documentation should also be provided:

- Shipment invoice
- Delivery receipt
- Bill of lading
- Invoice showing the value of the product being claimed
- Invoices for costs incurred, such as repairs or replacements of the product
- Additional supporting documentation may also be included or required

5.6 SUMMARY

Some of the important concepts discussed in this unit are:

- With the freight forwarding service providers, there are links to traditional handlers of every kind. They are engaged in activities like booking, contract and processing of more than 80% of the international aerial cargo consignments.
- The most essential thing while planning for shipping goods is to pack them, label them, carry out the necessary documentation as per the compliances. Efficiency in delivery of the goods along with the time line and safety too are important aspects.
- A freight rate is the pricing to certain cargo that is delivered from one given point to another or from the arrival point towards its destination. The price, however, varies upon the cargo, the mode of transport such as aircraft, train, truck or a ship, the weight of cargo and the distance to delivery destination.
- Freight rates vary largely on the cost of merchandise that is transported from the point of starting to the final destination. It is essential for the importers and exporters to be oriented as per the factors that are able to influence freight rates.
- When it comes to air freight, weight and volume are key factors. Air carriers will charge by either volumetric weight (also known as dimensional weight) or actual weight, depending on which is more expensive.
- The cost of the fuel is the first determinant of freight rates. To be able to transport commodities from one location to another, the first need is that of fuel that should be complete with the freight forwarders.
- The freight forwarding company should be following the rules and regulations as mentioned by the regulatory authority. If any of the deviations are discovered by the authority then they will be suspended or liable for huge penalty.
- Cargo may be owned by the charter in some special cases and they may employ a shipbroker for finding ship for delivering cargo for a given price that is referred to as freight rate. Freight rates may be levied on the bases of a per ton basis over a certain route.
- A time charter is the hiring of a vessel for a specific period of time; the owner still manages the vessel but the charterer selects the ports and directs the vessel

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Check Your Progress

14. List the types of cargo insurance.
15. What is freight claim? How is it processed?

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where to go. The charterer pays for all fuel the vessel consumes, port charges, commissions, and a daily hire to the owner of the vessel.

- Cargo insurance is taken into account for international as well as for domestic transportation. It is not easy to standardize and implement control without cooperation with relation to different countries and states, all due to the varying insurance.
- If there are any problems in commercial cargo matters then it should be directly addressed to the Operator who will be able to communicate it to the Master through e-mail, telephone or telex as per the convenience and availability of communication means.

5.7 ANSWERS TO 'CHECK YOUR PROGRESS'

1. A freight rate is the pricing of certain cargo that is delivered from one given point to another or from the arrival point towards its destination. The price, however, is determined by varying factors such as, the mode of transport such as aircraft, train, truck or a ship, the weight of cargo and the distance to delivery destination.
2. Factors that influence freight rates are:
   (i) Cost of Merchandise
   (ii) Fuel Charge
   (iii) Weight of Merchandise
   (iv) Size of Cargo
   (v) Delivery Time
   (vi) Mode of Shipment
3. The Chargeable Weight is determined in two conditions:
   (i) When Actual Weight is greater than Volume Weight
   (ii) Volume Weight is greater than Actual Weight
4. Following are some of the carriers with their own criteria:

   DHL, FedEx, UPS, Canada Post, FedEx Express & UPS and FedEx Ground & UPS Ground
5. Before any evaluation of freight cost, it is essential to consider few essential facts. The first thing is all about the urgent orders that need to be considered. If there is any delay in the transit then it will result in losing a client. So, time and urgency are two inter-linked factors. Another thing is related to air freight and speed without compromising on quality. If the cargo is under the impression that losing one customer may not impact the business, then they are wrong, as every single customer is important to the business reputation of air cargo liner.
6. Pre-export charges vary with forwarders and it fluctuates as per the prevailing condition.

   The charges that are levied for export are as follows:
   (i) Export Declaration
   (ii) Pick up
   (iii) Haulage

(iv) Screening charge or X-Ray charge
(v) Handling
(vi) Repackaging
(vii) Customs Inspection

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7. A voyage charter is the hiring of a vessel and crew for a voyage that is between the loading port and discharge port. The charter is paying the vessel owner as per ton and lump-sum basis.
8. Charter Party Agreement includes the following:
   (i) The Operator should be able to read the contract and be good in communication with the charter party agreement. It should be able to seek attention of manager for point clarification.
   (ii) In cases where client and/or broker is not able to forward the charter party, the Commercial Ship Operator should be able to request the information related to the necessary voyage.
   (iii) A voyage file unique with each charter party for each ship. It should be maintained by the Operator. Electronic voyage files should be created and stored within the company's messaging system.
   (iv) These files contain unique identification and located in the post fixture department. These files should be available in the regional office until with all outstanding items t indicating that voyage has been closed. After this, they are archived.
9. The Operator takes responsibility for routine communications with the Master for post fixture operation matters in compliance, the charterer's voyage orders and other relevant requirements. The specific means of communication and requirement for communication depend on how urgent is the situation.
10. The Operator should be able to arrange for on-hire and off-hire surveys as per requirement while ensuring the client's interests. He should also make efforts to reduce the costs of these surveys through the process of sharing them with the charterer or by coinciding the on-hire survey with the previous charter off-hire survey.
11. Aircrafts are categorized as per the configurations; one such configuration are the wings:
    (i) Monoplanes, with a single wing (that is, on either side of the fuselage)
    (ii) Biplanes, with two wings, one atop the other triplanes and quad-planes
    (iii) A tandem-wing craft has two wings, one placed forward of the other
12. A turbofan is a turbine engine having a large low-pressure fan ahead of the compressor section; the low-pressure air is allowed to bypass the compressor and turbine, to mix with the jet stream, increasing the mass of accelerated air. This system of moving large volumes of air at a slower speed raises efficiency and cuts both fuel consumption and noise.
13. A ramjet is an air-breathing engine that, after being accelerated to high speeds, acts like a turbojet without the need for a compressor or turbine.

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14. With varying levels, the following are categories are considered for cargo insurance:
    (i) Land Cargo Insurance: Under this insurance, all the coverage is to land transport that primarily covers trucks along with other utility vehicles. Coverage aspects include theft, damages as a result of collusion and other such risks. However, this insurance is domestic and only valid within the nation and not outside it.
    (ii) Marine Cargo Insurance: This insurance is all about transportation that can be either sea or through air. Transportation and goods are covered that includes damages from cargo loading/unloading, weather contingencies, piracies and other relevant issues. On a general note, the insurance is able to cover international transportation.
15. This is the legal claim that is demanded by the shipper or the consignee to a carrier for seeking financial reimbursement for loss or damage of a shipment. This claim is also referred to as shipping claims, transportation claims, cargo claims or loss and damage claims. A form is provided by each carrier that is specially used for the purpose of filing freight claims.

5.8 QUESTIONS AND EXERCISE

Short Answer Questions

1. Enumerate in brief the factors that influence the freight rates.
2. Discuss how are International Air freight quotes and prices are changing.
3. How are tariffs determined for freight?
4. Explain the term chargeable weight.
5. What is a time charter?
6. Why is charges collect and prepaid shipment?

Long Answer Questions

1. What is Cargo Insurance and list the types of cargo insurance.
2. What is the difference between voyage and time charters?
3. How will you explain the concept of volume weight?
4. Enumerate the various rules and regulations while shipping the cargo.
5. How does competition between different airliners influence the rates of cargo?
6. What are the different features of aircraft? Explain.

UNIT 6 INTERMEDIARIES/ REGULATORY FRAMEWORK IN AIR CARGO

Structure

6.0 INTRODUCTION

Intermediaries play a critical role in international commerce and in the development of the global marketplace. While large producers often possess the ability to execute many logistics functions in-house, smaller companies and inexperienced exporters lack the expertise or resources to do so. Freight intermediaries link the international supply chain by facilitating market access for exporters. The use of freight intermediaries allows a firm to enter foreign markets without specific operational knowledge or experience in those markets. Eighty per cent of the world's cargo passes through the hands of freight intermediaries. Freight forwarders, consolidators, customs brokers, NVOCCs, and 3PLs operate in every country, and the international share of revenues for freight intermediaries is projected to increase by as much as ten per cent annually. More efficient cargo movements imply reduced inventory carrying cost for buyers. Thus, faster moving cargo, enabled by efficient intermediaries, makes the export product more attractive to the buyer.

Regulations of freight intermediaries through market qualitative processes such as licensing and examination requirements (FIATA, IATA, ICAO, TACT, etc.) enhance the quality of freight intermediaries on the market and ensure that compliance to regulations is a transparent procedure and not enforced arbitrarily.

6.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Understand the role of intermediaries and regulatory mechanism in air cargo
- Explain the significance of freight forwarders: domestic and international
- Explain the concept of strict compliance with the law of destination countries
- Enumerate the role of freight forwarders' association
- Understand cargo warehousing and customs clearance
- Explain the formation and functions of ICAO
- Understand the formation of IATA and other bodies like FIATA, ACAAI, etc.
- Enumerate the role of Airport Authority of India
- Explain the role of OAG in air cargo
- Understand TACT Rules and Rate Books

6.2 UNDERSTANDING DOMESTIC AND INTERNATIONAL INTERMEDIARIES/FREIGHT FORWARDERS AND TRANSPORT REGULATIONS

Let us discuss the various domestic and international intermediaries and the role of freight forwarders.

6.2.1 Intermediaries

Shippers, whether they are large or small, are most likely to form connections and trade relationships with more than one intermediary. In air cargo travel if one is to ship by air then the goods will proceed through a forwarder.

If it is an ocean freight, large shippers are more likely to have their own shipping departments that directly deal with carriers. However, carriers are often looking for customers that are able to provide thousands of containers to be shipped in a year. Small shoppers are not able to fulfil the load requirements or do not have the sufficient volume to merit it as per the big carriers. In this case it becomes essential to deal with freight forwarders to obtain cargo wherever it is destined to reach.

Another fact is that often big shippers rely on intermediaries for placement of ocean and truck cargo.

When one is to look at the laws, the law formed by the US maritime was reformed many years ago to be able to bridge the gap between freight forwarders and agencies. An ocean transportation intermediary (OTI) is licensed by the Federal Maritime Commission (FMC) to be an ocean freight forwarder.

On practical terms, freight forwarders and non-vessel operating common carriers **(NVOCCs)** are responsible for providing different services. However, there are few organizations that are able to provide these services. Nonetheless, shippers should be aware about the kind of services offered and provided as per the current situation.

NVOCC: A freight forwarder, forwarder, or forwarding agent, also known as a non-vessel operating common carrier (NVOCC), is a person or company that organizes shipments for individuals or corporations to get goods from the manufacturer or producer to a market, customer or final point of distribution.

As far as freight brokers are concerned, they operate on trucking mode and are responsible for placement of last-minute or expedited loads within spot market.

In the recent years, two trends have emerged between intermediaries and carriers. At one point carriers are equipped or have acquired intermediaries to be able to offer a seamless supply chain solutions. On the other hand, carriers are looking for various means of cutting losses, reducing their customer care and are dependent more on intermediaries to help them form interface with customers and for the purpose of filling in the gap of human touch.

6.2.2 Identifying Different Brokers in the Industry

In diversified industries like air cargo, there is a need of different functions to be played by different units and it is essential to understand the role of each player. With each role there is a different requirement and a different title. For this, it is essential to know these players and their functions. These are as follows:

- **Freight broker**: The middleman who connects shippers and carriers.
- **Shipper:** An individual or business that has freight to move.
- **Import-export broker**: They facilitate with imports and exports. They work with customs, other government agencies, international carriers, and other companies and organizations that are in international freight transportation.
- **Agricultural truck broker**: As the name indicates, these are limited to working with a specified geographic area in a country. These are normally not regulated and work towards providing agricultural truck for moving the produce to another location or to market as per the need. Transport services are provided for exempted agricultural products.

- **Shipper's associations**: These are generally exempt, non-profit, co-op organizations that are created by shippers for the purpose of reducing transportation costs utilizing the means of pooling shipments. Shipper's association works on small scale as compared to freight forwarder; it is limited to the member and the services are exclusive or not available to general public.

6.2.3 Freight Forwarders: Domestic and International

A freight forwarder, forwarder, or forwarding agent, is also referred as non-vessel operating common carrier (NVOCC). It could be a person or a company that is engaged in organizing shipments for individuals or corporations for obtaining goods from the manufacturer or producer to a market, to the final destination or customer.

Forwarders are in a contract with a carrier or often multiple carriers that help them move the goods or transport it. A forwarder is not directly moving the goods, but acts as expert in managing logistics network. These are the carriers that use variety of transport such as airplanes, railroads, ships, trucks and other multiple modes with relation to single shipment. This clarifies that forwarders are engaged in ensuring all things including the process which is working on a smooth level till it reaches its destination. The freight forwarder is able to arrange for every possible means that helps move the cargo right from the beginning – from a plant to the airport and then forward to the destination city. It is even moved to the door of the customer through whatever means of transportation that is best suitable for this purpose.

International freight forwarders are engaged in forwarding; they are responsible for preparing and processing for customs as they have an expertise over it. They are able to prepare for all the documentation and perform other activities that are related to international shipments that help in smooth transition of transporting the goods.

The information is viewed by the freight forwarder that includes all the invoices, commercial invoice, export declaration of shippers, bill of lading and other such essential documents needed for the carrier or the country in which it is to be exported, imported or through trans-shipment. Majority of information is required for the process that is easy and convenient. This information is now being processed through paperless means.

It is to be understood that the freight functionality varies with the kind of forwarder and their speciality. It always aligns with the commercial position of a specific forwarder to provide services to its client. For instance, in Europe, some forwarders specialize in some particular freight and manage deliveries around large port. This defines their work related expansion and the extent of their reach.

6.2.4 Evolution of Freight Forwarding

If one is to understand all about the history of freight forwarders then it is said to have been established in the year 1836 and the first ever such recorded forwarder was Thomas Meadows and Company Limited of London, England. However, another account about Thomas Meadows and Company was published and written in the year 1972. It is said to be the beginning of rail transport and steamships created demand for the forwarding industry.

It is said that as trade relations began developing between Europe and North America, it created more demands. Another thing that came to surface about the

forwarders was their functionality that was related more to arranging carriage through making contracts with various carriers. Their responsibility includes advice related to documentation and with relation to the requirement of customers in the country where the package is to be delivered. The correspondent agent available overseas is to look after the goods of customers. He should be up to date about all the matters pertaining to transporting the goods and the factors that affect the movements of goods.

In recent times, the duties and responsibilities of forwarders are more elaborate. Though the core functionality is still the same, additional duties are added too. They operate as domestic carriers or they are working alongside corresponding agents overseas or with their self-owned branch offices. Within a single transaction, the forwarder is able to act as a principle or as an agent for their customer or at times both as per the demand of the situation.

Document Transfer Fee

International freight forwarders, customs brokers and other such forwarders involved in goods transport are also taking care of documentation procedure that includes documentation till the time goods are delivered. The destination documentation too is taken care of by them. The procedure involves document transfer fee. The fee is related to ocean freight charges, and this is paid by the importer at the time of discharge on the port and by the exporter at the origin. It is referred to as administration fee, document transfer free or document fee.

For importers, it is International Commercial Term (incoterm) FOB (free on board) and for exporters, it is incoterms CFR (cost and freight) and CIF (cost, insurance and freight). The fee charged is different from that of documentation fee that is often born by the carriers included in freight charges on a bill of lading. It is apart from the fee charged for document preparation often charged for release of cargo.

Variations Across Countries

1. **Australia:** In Australia majority of licensed workers are referred to as Customs Clearance Agents. They are also called Customs Brokers in local language. These operate under freight forwarder.
2. **Bangladesh:** Freight forwarders must have a government license.
3. **Canada:** Transport Canada is a department that is responsible for the implementation and enforcement of transportation policies and programs as it is the federal department. Canada Border Services Agency is yet another agency that helps in enforcing regulations that impact international freight forwarders. All this is due to their focus on security measurements.

   In the year 1948, the Canadian International Freight Forwarders Association (CIFFA) was established for the purpose of supporting and protecting the character, interest and status of foreign freight forwarders. This was taken care of through implementation of regulations and uniform trade practices. CIFFA is able to take up the role of education through certification and by providing advanced certificate programs that help train people for the related trade.
4. **India:** Federation of Freight Forwarders' Associations in India (FFFAI) is the Apex Body and the Sole Representative of 24 Member Associations from all

over India representing 5000 Custom House Agents (employing over 1,000,000 people).

5. **Ireland:** International merchandise trade makes a deep impact upon the Irish economy as much as €148 billion worth. The country exports 82% of its products; these are highlighted all because of freight forwarders. To maintain the uniformity and for the purpose of implementing practices, Associations including the Irish International Freight Association and FIATA are involved in it. FIATA is also involved in providing diploma in freight forwarding.

6. **Kenya and Tanzania:** In Kenya and Tanzania, freight forwarders are also called clearing and forwarding agents. It is essential to have a license that can be obtained from Kenya Revenue Authority and Tanzania Revenue Authority, respectively.

   The regulatory authority is responsible for the purpose of clearing consignments and customs, helps arranging transportation and forwards the consignment to the consignee. It is essential that exports and imports should be clear all through the customs.

7. **Nigeria:** Freight forwarding in Nigeria has always been working in the economy of Nigeria especially in its cash crop of groundnut ever since the year 1914. It cannot be necessarily categorized as freight forwarding; it was more like transportation of goods from one place to another. Then they began following the methodology related to freight forwarding and began facilitating transportation of services and goods.

8. **Pakistan:** It is estimated that there are 500+ freight forwarding companies under Pakistan International Freight Forwarders Association PIFFA. It works in collaboration with commerce ministry towards providing effective representation and the requisite support to the freight services to be able to meet highest standards of competence. The authority contributes towards educating the freight forwarders through the courses offered and with a diploma program.

9. **The UK:** The fact is that in the UK, forwarders need not require license from authorities to operate and to transport goods. However, many belong to the British International Freight Association. The goods are consolidated through different consignors that are organized into full loads to be transported to Europe via road. This is often referred to as groupage.

10. **USA:** There are strict rules and regulations in the US. The first one is that it should be registered with the transportation department and the motor administration. The forwarders are referred to as carriers that are able to accept freight for transport and these are liable for the purpose of delivering the freight as per their billing of lading.

When one is to look at legal meaning of freight forwarder, it is more like a person providing transportation of property for a bit of compensation. During the course of its business, it is able to perform the following activities:

- Assembling and consolidating or providing for the assembling and consolidating of the shipments and to perform or provide for the break bulks and distribute the operations related to shipments.

- Assuming responsibility for transportation along with receipt of the origin to the place of destination.
- Using part of transportation as a carrier subject to jurisdiction in transportation department.

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Terms and Conditions for Forwarders

It is essential that the international freight forwarders should be license holders by the authorities that certify them for transportation.

An Ocean Transportation Intermediary serves as freight forwarder or is often the NVOCC. Documentation is taken care of by the forwarders on behalf of ships. The carrier is able to hold out for the public for providing transportation, handling issues like bills of lading and other such documents in the entire process.

It is essential to understand the legal distinction between freight forwarder and NVOCC. A freight forwarder is more of an agent whereas NVOCC is a carrier responsible for carrying the goods but acts as its own principal.

It is to be understood that companies acting as ocean freight forwarder are not issuing their own contract of carriage or bill of lading. It is not in their domain to be liable for any loss or damage to the cargo except for the time when errors are related to paperwork, judgement or other responsibility.

NVOCC is able to act as freight carrier and they issue their own bill of lading. The agency is responsible for physical loss or damage to the goods in accordance with the terms and conditions. The bill of lading and tariff are all as per the compliance.

6.3 AIR FREIGHTFORWARDERS ASSOCIATION: ROLE AND RESPONSIBILITY, DOMESTIC AND DOOR-TO-DOOR DELIVERY

The **Air Forwarders Association (AFA)** is an authority that works for the forwarding industry; it is more of an association for the forwarders. It is created for the purpose of cargo carriers, air carriers and other such businesses that are within the global community of transportation. It is an alliance that represents member companies working towards moving cargo throughout the supply chain. It is engaged in shipping goods via air or ship that may include medical goods, live animals, manufactured goods and other numerous categories.

For the purpose of timely delivery of goods, the most essential and reliable means of transportation is that of air cargo. Another thing is time-sensitive and perishable goods that need to be delivered within stipulated time line. All this makes air cargo a priority for manufacturers and for those who want to deliver their sensitive goods as per schedule. Additionally, security is one of the top priority in the industry. Handling and managing the goods in a professional manner by well-trained cargo experts is essential. Maintaining full control over the cargo, securing facilities and delivery of the cargo to the plane are to be accomplished in a professional manner.

Air Forwarders Association (AFA): Air Forwarders Association is an organization that is proud to provide support, education, and expertise for domestic and international air freight forwarders.

Check Your Progress

1. What do you mean by freight intermediaries?
2. Define freight forwarder in air cargo.
3. Name the apex body of freight forwarders association in India.

6.3.1 Features Associated with the Delivery

1. **On board courier / hand carry:** If the product is critical that requires to be delivered at the earliest to the shipment destination then air cargo is the best option. An experienced forwarder will ensure that it is picked up from the point of origin, then boarded on to the chartered jet or passenger aircraft and will carry the delivery towards its destination.
2. **Expedited next flight out:** For the purpose of providing timely delivery, through quickest possible transit, urgent shipments are carried on across the country. Many freight forwarders provide customizable next flight out services. They picked up the shipments within minutes of getting call from the customer and ensured that shipment would be boarded in the next flight that is scheduled to the destination. The shipment is then delivered on arrival or it is held at the airport for the purpose of pickup.
3. **Next day am/pm:** Timing is essential and is a critical factor when it comes to shipments overnight. It is regardless of the product, as it is more about meeting the time criteria. Often the customer needs the document or product to be delivered for an important event. Forwarders are equipped to handle such urgency wherein the products are delivered next day or even afternoon delivery, depending on the urgency of the matter.
4. **Second day:** With combination of reliable services and wide network, the transportation solutions are complete to offer all range of services. Forwarders are equipped to handle second day delivery. Best combination of services are provided along with competitive pricing and services as per the industry.
5. **3-5 day express saver:** Whether it is a delivery related to a box or a pallet that needs to be shipped, the express delivery option offered by the forwarders helps in saving time. The most essential means of getting the shipment to its destination is using the extensive network of long distance carriers and regional carriers.
6. **Standard shipping:** If there is no time urgency for the shipment delivery and cost is the factor instead, then the standard delivery services are the best option. These services are a viable solution as they provide good flexibility and there is control over the resources as well as the costs.
7. **Exclusive use/specialized truckload:** Forwarders are responsible to take on business needs and they provide tailor-made services as per the needs of customer requirements. All the benefits are provided to the clients without any costly capital investment, liabilities and risks. The customer is able to avail the services and the delivery of shipment is ensured as per specialized truckload as it falls under exclusive use.
8. **Chartered aircraft:** This service is used when there is a need for delivering the goods immediately. Another thing is that when the shipment cannot be scheduled as per the next available flight, a chartered service is required. There is a need of charter services that are provided by forwarders as per the request of the customer for meeting critical delivery times.

Charters can range from small jet to freighters that are fully capable of taking the load of shipments; arrangements are exclusively made for the purpose of matching the critical shipment requirement.

6.4 CARGO WAREHOUSING AND MANAGEMENT SYSTEM: AN OVERVIEW

Cargo management requires managing warehousing facilities either through the client or managing it on the behalf of the client.

6.4.1 Inventory Management and Warehouse Management System (WMS)

Inventory control is all about either setting up the warehouse though the help of agency or getting one that is fully functional. It requires proper systems, analysis and rotation that ensures that space is utilized in the best possible manner and the products with time sensitivity are on priority.

For any **warehouse management system (WMS)**, it is essential to take some measures that will lead to effective in inventory management without wasting time or getting over involved in the process.

Through the use of technology like mobile application module, it becomes easy to manage the inventory as they are moved throughout the warehouse. The system is able to access the stock, replenish it and help with consolidation of items while making significant adjustments. Different batches are arranged, serial numbers are given, lots are drawn out for different products, data recorded and logs are kept of each transaction made. All this is done in real time.

A count of the goods is kept that helps in determining the percentage of each product dispatched and it helps in maintaining entries for inventories. Additionally, with everything updated on the system, it becomes easy to avoid delays. Managing inventory is all about eliminating it altogether.

Through continuous process with the inventory lifecycle along with counting and real time updates, the WMS helps in eliminating wasted time and gives accuracy. Agency managing it on behalf of the customer or providing the facility is expert in managing it all with time, skills, capacity and improved utilization of space. It even helps in managing excess inventory without wasting capital input and manages man hours.

Warehouse Management System (WMS): A warehouse management system (WMS) is a software application that supports the day-to-day operations in a warehouse. WMS programs enable centralized management of tasks such as tracking inventory levels and stock locations.

Warehouse Management System (WMS)

Warehouse management system provides configurable settings as per the business rules model. It helps in creating rules models by applying a variety of techniques that include a lot of technology /software integrated in the system. Stock control, serial codes and replenishment methods are used for the purpose of inventory management and control.

WMS functionality is all about managing system in the latest market trend and is developed as per the available solutions. This is done in the following ways:

Check Your Progress

4. What is the Airforwarders Association? Why was AFA created?
5. List some of the features associated with instant delivery.

NOTES

- Multi-site, multi-client management
- Routing of goods based on packaging levels
- ADR handling with consideration to the applicable storage rules
- Vendor managed inventory (VMI)
- Kitting and Assembly management
- Data validation (serial numbers, checking of digits, batch numbers etc.)
- Product expiry management
- Cycle counting (wall-to-wall, time-window-driven, event-driven)
- Reporting (inventory, performance, quality)
- Pallet pool administration
- The system supports various processes
- Receiving (pre-advised-based, UPI-based, SSCC, EAN-128)
- Put-away (optimised block and rack storage, including beam management)
- Replenishment
- Multiple picking strategy support
- Packing (for example, special order handling, carrier-specific labelling and RF-based packing)
- Automated housekeeping
- Dock management and vehicle loading
- Yard management
- Shipping

There are several modes and bases on which WMS can be operated. These are:

- Paper-based
- Radio-frequency-based (System-assisted and system-directed, using hand, wrist, truck and voice-terminals when needed in combination and connected to wearable printers)

6.5 CUSTOM CLEARANCE, FORMATION AND FUNCTIONS OF ICAO

Customs Department is a government authority that is designed for the purpose of implementing the policies for controlling and regulating import and export, collecting customs duties and for facilitating the movement of goods, people and cargo inside and out of country.

6.5.1 Area of Operations and Authority

All the seaports, airports and border gateways have customs departments to manage shipments. It is done to manage the movement of goods, for the purpose of exit facilitation and entry points for cargo into and outside of the country.

Check Your Progress

6. What do you understand by warehouse management system (WMS)?
7. List some of the ways in which WMS is done.

Agencies are the final authority and they regulate rules such as confiscation, arrests or holding on due to security reasons. They work with police departments for its implementation.

6.5.2 Customs and Trade Logistics

Following are the functions of customs in trade logistics and policies:

- On annual basis, each country publishes the foreign trade policies; it stipulates the conditions regarding goods and conditions that are deemed eligible for the purpose of export and import.
- The customs department helps in implementation of policies, rules and regulations and tariffs.
- There are few conditions under which many countries are given the permission of free imports or under certain categories they are permitted after obtaining licences.
- Items published as banned are removed from the import and not allowed in the country.
- The custom takes care of all the imported items and allows them only after thorough check and custom clearance. The items also include personal items, trade items, business items from establishments, government and defence agencies. Stipulated duties are to be paid prior to the release of the goods by the customs.
- Imported cargo is kept into warehouse of the customs bonded area that falls under the jurisdiction until the time of its clearance.

6.5.3 Imports and Customs Clearance

Freight Forwarders coordinating with the international transportation provide customs clearance services to their clients. This activity is known as customs brokerage. It is done to facilitate the customer through clearance duties without any hassle.

The process of customs clearance goes through extensive and complex preparation of submitting documents that are required for facilitating imports and exports. It represents the clients during the customs check, assessment and duty payment. The delivery is taken on behalf of the customer of the cargo from customs after the documents are cleared by the customs.

Following are the documents that are used in customs clearance:

(a) **Exports Documentation**: This comprises of sales invoice, bill of Lading or Air Waybill, purchase order from the buyer, packing list and certificate of origin along with documents specified by the buyer or as needed by financial institutions. This may also include documents of country regulations.

(b) **Imports Documentation**: This contains additional documents in addition to exports document list such as bill of entry and packaging list. It also includes documents related to financial institution of the said country and regulation from the importing country.

(c) **Shipping Bill:** Preparation of shipping bill requires classifying the cargo under certain categories within the entire process.

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Clearance Agents

Customs clearance agents are also referred to as carrying and forwarding agents. They are legal authority registered and licensed by the customs to carry on operations and process related to it for the client. Their role comprises of representing the clients or acting on behalf of them. They are the third party agencies engaged in customs clearance.

Customs agents are often engaged for the purpose of obtaining documentation of shipping bills to be submitted with the rest of documents as obtained from the client.

(a) **Check shipping regulations:** It is to be noted that there are variations in regulations as per the country when it comes to exports. It is essential to ensure that the customer or the agent is fully aware about the licences, special provisions, restrictions and prohibited goods as per the destination country.

(b) **Prepare documentation:** Obtaining essential documents and getting the documents ready in advance is vital to the process to avoid any hold-ups at the border or during customs check-up. All the information is correctly mentioned within the commercial invoice, goods are classified and the shipment procedures are followed.

Basics Related to Clear Customs

(a) **Create commercial invoice**

(b) **Duties and taxes:** It is to be noted that international shipments are liable to import duties and additional taxes. These vary as per the destination country and the shipment value attached to it. It is essential to be aware about it if not then the receiver will be liable to pay for it.

For the purpose of simplicity, these are the two ways the process can be made easy:

- **Proper Loading of Shipping Container:** One is to ensure that the shipping container is loaded properly. The shipper is responsible for loading the shipping containers. It can also be undertaken by the customers themselves. It is essential to do it properly as there are regulations issued by customs about it.

Improper loading will raise red flags by the customs and they will impose extensive examinations and searches of international shipments. This would cause delays and extra cost. It is essential that shippers of household and personal items follow it and are well aware of the international shipping and container loading.

- **Providing Complete and Accurate Information to Customs Broker/ Freight Forwarder:** This task involves complex paperwork for international shipping. Due to this freight forwarders are engaged in helping with all the details. They are experts in carrying out the process of shipping the cargo smoothly with all the details included, regulations and compliances met with without any hassle. The customer is able to focus on business without going through the complications of documentation.

  The freight forwarder still would need certain amount of paperwork such as, business information, inventories, itemized lists of shipments, and value

of cargo. This information impacts the customs fees and duties on the ports. It helps in making assessment of the cargo shipment and other such details.

(c) **Customs Clearance Agency and Process:** Engaging third party Customs Clearance Agent as well as a Freight Forwarder becomes essential to smoothen the entire process. The transportation is managed by freight forwarders as a part of exports and imports along with customs clearance and approval and coordinating with the regulatory authorities.

(d) **Pre-Customs Clearance:** Customs valuation process required a long list of documents that should be supplied by the importer. The importer, forwarding agents and customs documents should be provided by them. All the essential documents are to be filed as a part of the clearance process as undertaken by the clearance agent. They are responsible for creating bill of entry that is the prime document that helps in obtaining customs approval on which valuation and clearance is approved. The entire procedure comprises of taking care of terms and documentation. These are prepared in advance prior to the dispatch of consignment from the origin and bill of entry with commercial documentation and transportation documents. All these are facilitated through electronic means by the clearance agency and then these are registered by the customs department.

(e) **Clearance Process at Customs:** This includes the following steps:

- Physical inspection is undertaken when the consignment arrives. At the same time, valuation of import is done too.
- Valuation of imports comprise of evaluating the correct item description, classifying the items as per customs chapter and tariff.
- Involving clearance agency ensures that coordination is done with the customs for duty to be paid. They also take delivery of goods and deliver it to the importers to the designated point with original documents.
- Permission is given by the customs for free bonding or warehousing period of 3-7 days as per the country and location. Air shipments have 3 days for clearance and sea shipments have 7 days for free warehousing. This is the stipulated time within which the importer needs to clear the goods.

6.5.4 Formation and Functions of the International Civil Aviation Organization (ICAO)

The International Civil Aviation Organization (ICAO) is a dedicated agency of the United Nations. They are responsible for codifying the principles and techniques for international air navigation. It sees through the process of planning and development of air transport ensuring orderly growth along with safety. Its headquarters is located in the Quartier International of Montreal, Quebec, Canada.

The Air Navigation Commission (ANC) is the technical body within ICAO. The Commission comprises of 19 Commissioners, nominated by the ICAO's contracting states. They are appointed by the council of ICAO.

International standards and practices are developed under the ANC, but the procedure is carried on by the ICAO panels. Once the approval is sought by the commission, the standards are approved by the ICAO prior to sending it to member states for the final process of approval.

The ICAO Council comprises the following:

- Standards and recommended practices related to air navigation.
- Takes care of the entire infrastructure
- Flight inspection
- Prevents unlawful interference
- Facilitates the procedures of border-crossing for the purpose of international civil aviation
- Defining the protocols related to air accident investigation that transport safety authorities need to follow

Functions of ICAO

- ICAO also regulates functions that are utilized in the airline industry; one such is the Aeronautical Message Handling System (AMHS).
- It is essential that every country should have accessible Aeronautical Information Publication (AIP) that should have complete information required for air navigation. This should be updated every 28 days with new information.
- The standards of ICAO ensure that publication related to temporary hazards of aircraft are to be brought out on regular basis.
- It helps in defining International Standard that sets tone for standard variation of pressure, temperature, density, and viscosity with altitude in the Earth's atmosphere. This is useful in calibrating instruments and designing aircraft.
- The agency standardizes passports that are machine readable globally.
- Publishing 9303 Machine Readable Travel Documents, the technical standard for machine-readable passports. With the recent development of technology, biometric passports too are created that contains computer readable chips containing information of the traveller.
- Activating the infrastructure management, communication, navigation and activities related to surveillance of ATM or Air Traffic management comprising digital techniques like satellite systems.

6.6 IATA: FORMATION, FUNCTIONS, MEMBERS AND OTHER IATA BODIES LIKE FIATA AND ACAAI

Let us analyse the functions, formation and other bodies of IATA.

6.6.1 IATA

International Air Transport Association (IATA) was formed in April 1945 in Havana, Cuba. In the beginning the organization comprised of 57 airlines from 31 countries as their members. Now, the trade association for the world's airlines represents some 275 airlines or 83% of total air traffic. It supports many areas of aviation activity and helps formulate industry policy on critical aviation issues. IATA's work gives inputs to ICAO.

Check Your Progress

8. State the areas of customs operations and authority.
9. What is ICAO?

6.6.2 Aims, Objectives and Services of IATA

Priorities: The agency sets priorities that are more like standards for aviation industry. These are as follows:

(a) **Safety:** IATA sets priority for safety on the top of its standards with its IATA Operational Safety Audit (IOSA). IOSA has made it compulsory at the state level by several countries. However, it was not until 2014 that a special panel was set up by IATA for the purpose of tracking aircraft in real time and setting measures for the same. This was done after the misfortunate incident of disappearance of Malaysia Airlines Flight 370 on 8 March, 2014.

(b) **Security:** Ever since the 9/11 attacks, security is of utmost concern. Now there are series of rules that are to be followed by different countries with the development of checkpoint that sets the tone for passenger differentiation and risk assessment.

(c) **Simplifying the Business:** It was launched in the year 2004 that established concepts related to passenger travel, e-ticket and boarding passes with brocading. Other innovative systems too are established that come under Fast Travel initiative, including a range of self-service baggage options.

(d) **Services:**

These are as follows:

- IATA supplies consulting and training services in numerous fields crucial to aviation.
- Travel professionals need to seek Travel Agent accreditation. When accreditation is obtained completely, the agents are able to sell tickets on behalf of IATA member airlines.
- Cargo Agent accreditation is available to cargo agents.
- IATA also runs the Billing and Settlement Plan, which is a $300 billion-plus financial system that looks after airline money.
- IATA is also responsible for providing business intelligence publications and services.
- Training covers all aspects of aviation and ranges from beginner courses through to senior management courses.
- IATA manages the Ticket Tax Box Service (TTBS), a database of taxes for airlines.

6.6.3 FIATA

FIATA, in French "Fédération Internationale des Associations de Transitaires et Assimilés", in English "International Federation of Freight Forwarders Associations", was founded in Vienna, Austria on May 31, 1926. FIATA is a non-governmental organization. The organization represents an industry covering 40,000 forwarding and logistics firms, also referred as the 'Architects of Transport.'

FIATA works in consultation with the Economic and Social Council (ECOSOC) of the United Nations and the United Nations Conference on Trade and Development (UNCTAD), and the UN Commission on International Trade Law (UNCITRAL).

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The organization is representative of freight forwarding industry by many other governmental organisations, governmental authorities, private international organisations related to transport. It also includes the International Chamber of Commerce (ICC), the International Air Transport Association (IATA), the International Union of Railways (UIC), the International Road Transport Union (IRU), the World Customs Organization (WCO), the World Trade Organization (WTO), etc.

6.6.4 ACAAI

Air Cargo Agents Association of India (ACAAI) was founded in the year 1970. It is a recognised National Association that represents the entire cargo association of India. It strives to safeguard and promote the interests of the members through the means of extending professional assistance and by guiding on important matters of concern in the industry. The head office is located in Mumbai and its eight regional offices are located in other cities such as Hyderabad, Chennai, New Delhi, Bangalore, Ahmedabad, Kerala and Kolkata.

Its object is to facilitate the smooth functioning and growth of the cargo industry by helping achieve export targets of the nation. To achieve this, it works in association with numerous Government Ministries and Departments, airlines, International Associations such as IATA, FIATA and FAPAA on behalf of it's members.

- **Scope of Activities:** The association is known to collaborate with different ministries such as the Union Ministries of Finance, Commerce and Civil Aviation, CBEC, CBDT, AERA, BCAS, AAI, Ground Handling agencies of airports, Export Promotion Council, IATA, FIATA, FAPAA, airlines, etc. All this is done for the purpose of resolving issues of its members.
- **Areas of its Activities:** ACAAI helps in promoting growth, professionalism, development of the cargo industry of India. The association is able to provide a regular medium that opens dialogue with the members, customers, importers and exporters including numerous Government Departments and Authorities.

The association maintains contacts with other such bodies spread across the globe that are related to air cargo trade and is representative of matters in freight forwarding industry. It assimilates information with regard to different aspects of the related industry and helps in disseminating the same to the members at regular intervals through circulars and other such updates.

The association is a member of different government committees such as the Standing Committee on Promotion of Exports by Air (Scope Air), Air Cargo Logistics Promotion Board (ACLPB), Advisory Committees of the Indian Customs such as Trade Facilitation Committee (TFC), Cargo Facilitation Committees of the Airports Authority of India (CAFAC), amongst others.

Training: The association is known to conduct training programmes at regular intervals. The members are able to avail these programmes as these are job-oriented subjects like Basic Cargo, Dangerous Goods Regulations (DGR) and DGR Refresher. All these programmes are designed to provide appropriate knowledge and equip the members with professional knowledge that helps them become competitive.

Check Your Progress

10. When was IATA formed? List some of the services provided by IATA.
11. Enumerate the scope of activities of ACAAI.

6.7 FORMATION AND FUNCTIONS OF AIRPORT AUTHORITY OF INDIA (AAI)

NOTES

Let us analyse the history behind the formation of AAI and also discuss its functions.

6.7.1 Airports Authority of India (AAI)

The Airports Authority of India (AAI) comes under the Ministry of Civil Aviation, Government of India. The association is known for creating, maintaining, upgrading and managing civil aviation infrastructure throughout the country. Additionally, its scope of services spreads to providing Air Traffic Management (ATM) services over Indian airspace and adjoining oceanic areas. It also manages a total of 125 Airports, including 18 International Airports, 7 Customs Airports, 78 Domestic Airports and 26 civil enclaves at Military Airfields.

AAI comprises of ground installations at all airports that also includes 25 other locations and ensures safety to the operations of aircraft. The association traverses prime air routes throughout the country with its radar installations at 11 different locations.

The association implements Automatic Dependence Surveillance System (ADSS), that is one of a kind of its technology deployed at Kolkata and Chennai Air Traffic Control Centres. With this technology, India becomes the first ever country to use this technology in the South East Asian region. The technology helps in Air Traffic Control over oceanic areas through the deployment of satellite mode of communication.

The association has implemented Performance Based Navigation (PBN) procedures at Mumbai, Delhi and Ahmedabad Airports initially. Technology is being utilized in collaboration with the Indian Space Research Organisation (ISRO). It utilizes satellite based system for the purpose of providing better navigation. The navigation signals received from GPS are then augmented to achieve the navigational requirement of aircraft. This technology completed its first phase in February, 2008.

AAI provides four training establishments. These are as follows:

- The Civil Aviation Training College (CATC) at Allahabad
- National Institute of Aviation Management and Research (NIAMAR) at Delhi
- Fire Training Centres (FTC) at Delhi & Kolkata.
- An Aerodrome Visual Simulator (AVS) has been provided at CATC and non-radar procedural ATC simulator equipment is being supplied to CATC Allahabad and Hyderabad Airport. AAI has a dedicated Flight Inspection Unit (FIU). Additionally, AAI undertakes flight calibration of navigational aids for the Indian Air Force, Indian Navy, Indian Coast Guard and other private airfields in the country.

6.7.2 Functions of AAI

The different functions of AAI are mentioned below:

- Designing, developing, operating and maintaining international and domestic airports and civil enclaves.
- Controlling and managing the Indian airspace that extends over to the territorial limits of the country, as approved by ICAO.

- Constructing, modifying and managing passenger terminals.
- Developing and managing the cargo terminals at international and domestic airports.
- Making provisions of passenger facilities and information kiosks at passenger terminals within airports.
- Expansion and strengthening of operation area, viz. Runways, Aprons, Taxiway, etc.
- Provision of visual aids.
- Provision of Communication and Navigation aids, viz. ILS, DVOR, DME, Radar, etc.

6.8 IATA AREAS, AIRLINE PREFIX, CITY CODING/ DECODING, FREEDOMS OF THE AIR, AND TIME CALCULATION

Let us discuss the above mentioned terms in detail here.

6.8.1 IATA Areas and Airline Prefix

Airline Prefix or Accounting Code: IATA uses three-figure codes for transport documents. The same number can be used for cargo documentation and is known as an 'airline prefix'. Some examples are mentioned below.

IATA prefix	IATA code	ICAO code	Airline name	Base airport	Country	Start
101	LH	DLA	Air Dolomiti	Verona (VRN)	Italy	1989
103	D2	SSF	Severstal Air Company	Cherepovets (CEE)	Russia	2002
104	EW	EWG	Eurowings	Dortmund (DTM)	Germany	1993
105	AY	FIN	Finnair	Helsink (HEL)	Finland	1923
106	BW	BWA	Caribbean Airlines	Piarco (POS)	Trinidad & Tobago	2006
108	FI	ICE	Icelandair	Keflavik (KEF)	Iceland	1937
110	UJ	LMU	Almasria Universal Airlines	Cairo (CAI)	Egypt	2009
111	UP	BHS	Bahamasair	Nassau (NAS)	Bahamas	1973
112	CK	CKK	China Cargo Airlines	Shanghai (SHA)	China - PRC	1998
114	LY	ELY	El Al	Tel Aviv (TLV)	Israel	1948
115	JJ	ASL	Air Serbia	Belgrade (BEG)	Serbia	2013
116	8W	PWF	Private Wings	Berlin (SXF)	Germany	1991
116	-	USC	Airnet Express	Columbus (LCK)	USA	1974
117	SK	SAS	SAS Norway	Oslo (OSL)	Norway	2004
117	SK	SAS	Scandinavian Airlines - SAS	Copenhagen (CPH)	Sweden	1946
118	DT	DTA	TAAG Angola Airlines	Luanda (LAD)	Angola	1976
121	2N	NTJ	Next Jet	Stockholm (ARN)	Sweden	2003
124	AH	DAH	Air Algérie	Algiers (ALG)	Algeria	1947
125	BA	BAW	British Airways	London (LHR)	United Kingdom	1924
126	GA	GIA	Garuda Indonesia Airways	Jakarta (CGK)	Indonesia	1950
127	G3	GLO	GOL Linhas Aéreas Inteligentes	Sao Paulo (CGH)	Brazil	2009
128	UO	HKE	Hong Kong Express Airways	Hong Kong (HKG)	Hong Kong	2005
129	MP	MPH	Martinair	Amsterdam (AMS)	Netherlands	1958
131	JL	JAL	Japan Airlines	Tokyo (HND)	Japan	1983
133	LR	LRC	Avianca Costa Rica	San José (SJO)	Costa Rica	1991
134	AV	AVA	Avianca	Bogotá (BOG)	Colombia	1940
134	QT	TPA	Avianca Cargo	Bogotá (BOG)	Colombia	2013
135	VT	VTA	Air Tahiti	Papeete (PPT)	French Polynesia	1986
136	CU	CUB	Cubana de Aviacion	Havana (HAV)	Cuba	1959
139	AM	AMX	Aeromexico	Mexico City (MEX)	Mexico	1988
140	LI	LIA	LIAT	Antigua (ANU)	Antigua	1974
141	FZ	FDB	flyDubai	Dubai (DXB)	UAE	2009
143	AU	AUT	Austral Líneas Aéreas	Buenos Aires (AEP)	Argentina	1971
144	7T	RTM	DHL Ecuador	Guayaquil (GYE)	Ecuador	1991
145	UC	LCO	LATAM Cargo	Santiago (SCL)	Chile	2016

Check Your Progress

12. Elaborate the role of AAI.
13. List the name of establishments set up by AAI.

6.8.2 IATA Codes

NOTES

Codes standardized by IATA are an essential part of the travel industry. The codes serve the purpose of identifying an airline, its destinations and its traffic documents. The dedicated codes are useful for smoothly running the systems for passenger and cargo traffic that are dependent upon these codes.

IATA airline designators or IATA reservation codes are two-character codes assigned to the world's airlines. The standard is described in IATA's Standard Schedules Information Manual and the codes details are described in IATA's Airline Coding Directory. The publications are made available annually.

The codes assigned by IATA are based on the designators provided by ICAO which were issued in 1947 as two-letter airline identification codes. Later on, IATA expanded the 2-letter-system with codes consisting of a letter and a digit (or vice versa). These changes were done after ICAO had introduced its current 3-letter-system in 1982. Prior to it, only combinations of letters were used.

Airline designator codes follow the format xx (a), i.e., two alphanumeric characters (letters or digits) followed by an optional letter. Although the IATA standard provides for three-character airline designators, the third character is optional and has not been used in any assigned code by IATA. All this is due to the computer systems that are still not able to comply with the new standards even though the system has been introduced for the past 20 years.

Recent codes issued comply with IATA Resolution 762 that requires only two characters. These codes comply with the current airline designator standard, but use only a limited subset of its possible range.

There are three types of designators: unique, numeric/alpha and controlled duplicate.

Designators are used for the purpose of identifying airline for reservations commercially. It comprises of tickets, timetables, air waybills and tariffs. The same system is utilized in telecom too.

A flight designator is an amalgamation of the airline designator, xx(a), and the numeric flight number, n(n)(n)(n), plus an optional one-letter 'operational suffix' (a). Therefore, the full format of a flight designator is xx(a)n(n)(n)(n)(a).

After the delisting of an airline, the code is free to be used for another after a period of six months. At the same time, controlled duplicates too are issued for running the system. Controlled duplicates are utilized or issued to airlines that differ in destination and do not overlap in destinations. It is to avoid the use of similar code for two airlines. Controlled duplicated is utilized in a proper manner with the inclusion of an asterisk (*). An example of this is the code "6Y", which refers to both Mid Airlines, a charter airline in Sudan, and Med Airways, a charter airline in Lebanon.

IATA is also responsible for accounting or prefix code. The number provided for issuance of tickets as it represents the first three characters of the ticket number.

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6.8.3 ICAO Airline Designator

It is an airline code assigned by the International Civil Aviation Organization (ICAO) to aircraft operating agencies, aeronautical authorities, and services related to international aviation; each of whom is allocated both a three-letter designator and a telephony designator. All these codes are unique to all the airlines as listed in ICAO Document 8585: Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.

ICAO codes have been issued since 1947. These codes are primarily based on a two-letter-system and are almost similar to the airline codes used by IATA. However, it is to be noted that as soon as an airline joined IATA its existing ICAO-two-letter-code was taken over as IATA code. This is done due to the similarity of the coding system. The changes in the code system only occurred in 1980s that were two-letter-airline-designators.

In the 1970s, the abbreviation BA was the ICAO code and the IATA code of British Airways while non-IATA-members like Court Line used their 2-letter-abbreviation as ICAO code only. In 1982, ICAO introduced the latest system of three-letter-system; this step was taken as a result of increasing number of airlines.

Things changed within five years and thereafter it became the latest official ICAO standard system in November 1987 while IATA still continued with the older 2-letter-system that was introduced by ICAO in 1947.

In order to provide clarity and for the system to work smoothly, certain combinations are not used. For instance, SOS is not allocated to avoid confusion with other systems. Other designators that begin with Y and Z are reserved for government organizations. The designator YYY is used for operators that do not have a code allocated.

Airlines including other transportation services such as railway, bus and ferry companies, computer reservations systems (CRSs) and ULD owners/leasing companies may be assigned an IATA two character designator code.

Other types of codes are:

- **Accounting or prefix codes:** These are dedicated to transport documents such as the accounting code 076 at the beginning of a ticket number is an indicator that it is a traffic document of Middle East Airlines. However, it is possible that the same number may be used for cargo documentation and is known as an airline prefix.
- **Baggage tag issuer code:** This code is provided to airlines that do not qualify for IATA codes but operate at airports with automated baggage sortation systems.
- **Location identifiers:** Airlines and CRSs are allowed to raise the request to obtain a unique three-letter code to identify an airport such as GVA = Geneva. Additionally, it is possible that bus, rail or ferry locations may be eligible for an IATA location identifier if these locations are involved in intermodal airline travel.

6.8.4 Time Calculation

The earth comprises of 360 imaginary lines referred as longitudes or meridians running vertically between the poles. Each of these longitudes is called a degree. The 0 degree longitude passing through Greenwich, near London, is considered as standard and for this reason it is utilized for other time zones that are calculated as per the basis of this consideration. The time difference between each longitude (each degree) is 4 minutes. So if it is 12 noon at Greenwich (0 degree), it would be 12:04 pm at 1 degree meridian and so on. In India, the standard meridian is 82-and-half degree. So the time difference between Greenwich and India is 82.5 x 4, which is 330 minutes (5 hours 30 minutes).

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6.9 OFFICIAL AIRLINE GUIDE (OAG), TACT RULES AND RATE BOOKS

In this section we will discuss the concept of official airline guide and the use of tact rules and rate books.

6.9.1 OAG

Official Airline Guide (OAG) is a travel company that is based in the UK. Its functionality is that of providing digital information and applications to all the airlines, government agencies, airports and other travel service companies. The best that this company is known for is its schedules' database that provides detailed information and provides analytical tools that helps assess air travel trends.

Official Airline Guide (OAG): OAG is an air travel intelligence company based in United Kingdom. It provides digital information and applications to the world's airlines, airports, government agencies and travel-related service companies.

Products and Services of OAG

Let us discuss the various products and services of OAG.

Airline Relations: OAG is responsible for providing information and content to airlines that helps them manage their schedules and figure out flight status data for more than 900 airlines. The agency works in collaboration with major GDS or Global Distribution Systems that helps in expansion of its network of providers all throughout the air travel ecosystem. Additionally, the system is customized as per the needs of the airlines and as per its type.

There are three primary products of OAG. These are as follows:

- o Airline Schedules
- o Flight Status Information
- o Analytics

OAG schedules: OAG schedules database for more than 900 airlines. This also includes at least 115 low-cost carriers and over 4000 airports. If one is to look at the estimate of its scheduled delivery then it reaches to the point of at least 165,600 dynamic schedule updates on routine. The company brings out numerous products that help in formatting schedules as per demand; it is capable of offering instant access as per the real-time flight schedules to the data files. It is able to deliver information as per flight schedules through the means of delivery methods that vary as per real-time reports.

Check Your Progress

14. What do you mean by airline designator codes?

OAG FlightView: FlightView was recently acquired in 2015 by OAG. It instantly became a leading provider of travel and information related to flight status of day flight. The acquisition has provided OAG a flight status database that is able to offer customers the benefit of wide variety of products. The FlightView brand is capable of providing software like Data APIs, digital display modules and other such software that are beneficial for airports and hotels for providing weather information, air traffic information, flight tracking and FIDS or Flight Information Display Screens.

OAG analytics: OAG comprises of analyser suite that contains 4 modules which are able to provide insight and analysis to airline schedules, airport operations and passenger bookings. The modules are able to provide trends on capacity and frequency along with route development information. For instance, traffic module is able to provide information derived from passenger booking giving details about number of passengers, origin, arrival at a certain point in airport, load factors with relation to each flight, seize of passenger from the origin and destination, seats booked on specific routes and all such details. Another module is designed to serve the purpose of helping with airline connections, MCTs or minimum connection times and QSI.

The analytics team of OAG is equipped with market intelligence group that helps in providing analysis tool to airlines, airports, alliances and wider industry organizations.

6.9.2 The Air Cargo Tariff and Rules (TACT)

The Air Cargo Tariff and Rules (TACT) provides information to cargo professionals to help them effectively manage air transport worldwide. It is the source of shipping and accepting air cargo that comprises of carrier regulations, industry and country. The rates provided by TACT are up-to-date as per the current industry trends and are useful for carrier and pre-constructed rates.

Some important aspects of TACT are:

(a) **TACT issue:** TACT is issued three times a year, effective February 1, June 1 and October 1.

(b) **Participating Carrier:** It comprises of airlines that comply with the dedicated rates and constructed rates, following the rules as per the AWBs. The names of the carrier airlines are published in the TACT books. To define a participating carrier is a carrier that participates in the tariff and applies rates, routings, regulations and charges of the tariff.

(c) **Application of Tariff:** The rates, charges and regulations published in TACT Rules and TACT Rates are applicable for transportation by the participating carriers.

(d) **Acceptance of Consignment:** Cargo can be accepted through IATA cargo agents or directly from Shipper.

Rules

- Industry, country and carrier rules
- IATA rules on the acceptance of goods and Air Waybill completion
- Country rules, regulations and charges on import, transit and export

- Airport and storage facilities, handling equipment
- Airline, city and airport codes, AWB prefixes

Rates and surcharges

- Industry and carrier specific rates
- 4,5 million rates for 350,000 city pairs
- Industry, country and carrier specific charges for charges collect, class rates and dangerous goods
- Calculation of charges and cargo claims

6.10 SUMMARY

Some of the important concepts discussed in this unit are:

- Intermediaries play a critical role in international commerce and the development of the global marketplace. While large producers often possess the ability to execute many logistics functions in-house, smaller companies and inexperienced exporters lack the expertise or resources to do so. Freight intermediaries link the international supply chain by facilitating market access for exporters.
- Freight forwarders, consolidators, customs brokers, NVOCCs, and 3PLs operate in every country, and the international share of revenues for freight intermediaries is projected to continue increasing by as much as ten percent annually. In the recent years two trends have emerged between intermediaries and carriers. At one point carriers are equipped or have acquired intermediaries to be able to offer a seamless supply chain solutions.
- International freight forwarders, customs brokers and other such forwarders involved in goods transport are also taking care of documentation procedure that includes documentation till the time goods are delivered.
- An Ocean Transportation Intermediary serves as freight forwarder or as NVOCC or non-vessel-operating common carrier. Documentation is taken care of by the forwarders on the behalf of ships.
- Cargo management requires managing warehousing facilities either through the client or managing it on the behalf of the client.
- Warehouse management system provides configurable settings as per the business rules model. It helps in creating rules models by applying a variety of techniques that includes a lot of technology /software integrated in the system. Stock control, serial codes and replenishment methods are used for the purpose of inventory management and for its control.
- Customs Departments are government authority designed for the purpose of implementing the policies for controlling and regulating import and export, collecting customs duties and for facilitating the movement of goods, people and cargo inside and out of country.
- The International Civil Aviation Organization (ICAO) is a dedicated agency of the United Nations. They are responsible for codifying the principles and

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Check Your Progress

15. What is OAG? What are the primary products of OAG?
16. How does TACT help to effectively manage air transport worldwide?

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techniques for international air navigation. It sees through the process of planning and development of air transport ensuring orderly growth along with safety. Its headquarters are located in the Quartier International of Montreal, Quebec, Canada.

- The codes assigned by IATA are based on the designators provided by ICAO which were issued in 1947 as two-letter airline identification codes. Later on, IATA expanded the 2-letter-system with codes consisting of a letter and a digit (or vice versa). These changes were done after ICAO had introduced its current 3-letter-system in 1982. Prior to it, only combinations of letters were used.
- OAG is responsible for providing information and content to airlines that helps them manage their schedules and figure out flight status data for more than 900 airlines. The agency works in collaboration with major GDS or Global Distribution Systems that helps in expansion of its network of providers all throughout the air travel ecosystem.
- The Air Cargo Tariff and Rules (TACT) provides information to cargo professionals to help them effectively manage air transport worldwide. It is the source of shipping and accepting air cargo that comprises of carrier regulations, industry and country. The rates provided by TACT are up- to- date as per the current industry trends that are useful for carrier and pre-constructed rates.

6.11 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Freight intermediaries link the international supply chain by facilitating market access for exporters. The use of freight intermediaries allows a firm to enter foreign markets without specific operational knowledge or experience in those markets.
2. A freight forwarder, forwarder, or forwarding agent, is also referred as non-vessel operating common carrier (NVOCC). It could be a person or a company that is engaged in organizing shipments for individuals or corporations for obtaining goods from the manufacturer or producer to a market, to the final destination or customer.
3. Federation of Freight Forwarders' Associations in India (FFFAI) is the Apex Body and the Sole Representative of 24 Member Associations from all over India representing 5000 Custom House Agents (employing over 1,000,000 people).
4. The Airforwarders Association (AFA) is an authority that works for the forwarding industry; it is more of an association for the forwarders. It was created for the purpose of cargo carriers, air carriers and other such businesses that are within the global community of transportation.
5. Some of the features associated with instant delivery are:
   - On board courier / hand carry
   - Expedited next flight out
   - Next day am/pm
   - Second day

- 3-5 day express saver
- Standard shipping, etc.

6. Warehouse management system (WMS) provides configurable settings as per the business rules model. It helps in creating rules models by applying a variety of techniques that include a lot of technology /software integrated in the system. Stock control, serial codes and replenishment methods are used for the purpose of inventory management and for its control.
7. Some of the ways in which WMS is done are:
   - Multi-site, multi-client management
   - Routing of goods based on packaging levels
   - ADR handling with consideration to the applicable storage rules
   - Vendor managed inventory (VMI)
   - Kitting and Assembly management
   - Data validation (serial numbers, checking of digits, batch numbers etc.)
   - Product expiry management
   - Cycle counting (wall-to-wall, time-window-driven, event-driven)
   - Reporting (inventory, performance, quality), etc.
8. All the seaports, airports and border gateways have customs departments to manage shipments. It is done in order to manage the movement of goods, exit facilitation and entry points for cargo into and outside of the country. They are the final authority and they regulate rules such as confiscation, arrests or holding on due to security reasons. They work with police departments for its implementation.
9. The International Civil Aviation Organization (ICAO) is a dedicated agency of the United Nations. They are responsible for codifying the principles and techniques for international air navigation. It sees through the process of planning and development of air transport ensuring orderly growth along with safety. Its headquarters is located in the Quartier International of Montreal, Quebec, Canada.
10. International Air Transport Association (IATA) was formed in April 1945 in Havana, Cuba. In the beginning the organization comprised of 57 airlines from 31 countries as their members. Now, the trade association for the world's airlines represents some 275 airlines or 83% of total air traffic. It supports many areas of aviation activity and helps formulate industry policy on critical aviation issues.

    Services provided by IATA are:
    - IATA supplies consulting and training services in numerous fields crucial to aviation.
    - Travel professionals need to seek Travel Agent accreditation. When accreditation is obtained completely, the agents are able to sell tickets on behalf of IATA member airlines.
    - Cargo Agent accreditation is available to cargo agents.
11. ACAAI is known to collaborate with different ministries such as the Union Ministries of Finance, Commerce and Civil Aviation, CBEC, CBDT, AERA,

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BCAS, AAI, Ground Handling agencies of airports, Export Promotion Council, IATA, FIATA, FAPAA, airlines, etc. All this is done for the purpose of resolving issues of its members.

12. The Airports Authority of India or (AAI) comes under the Ministry of Civil Aviation, Government of India. The association is known for creating, maintaining, upgrading and managing civil aviation infrastructure throughout the country. Additionally, its scope of services spreads to providing Air Traffic Management (ATM) services over Indian airspace and adjoining oceanic areas. It also manages a total of 125 Airports, including 18 International Airports, 7 Customs Airports, 78 Domestic Airports and 26 civil enclaves at Military Airfields.
13. AAI provides four training establishments. These are as follows:
    - The Civil Aviation Training College (CATC) at Allahabad
    - National Institute of Aviation Management and Research (NIAMAR) at Delhi
    - Fire Training Centres (FTC) at Delhi & Kolkata
    - An Aerodrome Visual Simulator (AVS) has been provided at CATC and non-radar procedural ATC simulator equipment is being supplied to CATC Allahabad and Hyderabad Airport
14. IATA airline designators or IATA reservation codes are two-character codes assigned to the world's airlines. The standard is described in IATA's Standard Schedules Information Manual and the codes details are described in IATA's Airline Coding Directory. The publications are made available annually.
15. Official Airline Guide (OAG) is Travel Company that is based in the UK. Its functionality is that of providing digital information and applications to all the airlines, government agencies, airports and other travel service companies. There are three primary products of OAG. These are as follows:
    - Airline Schedules
    - Flight Status Information
    - Analytics
16. The Air Cargo Tariff and Rules (TACT) provides information to cargo professionals to help them effectively manage air transport worldwide. It is the source of shipping and accepting air cargo that comprises of carrier regulations, industry and country. The rates provided by TACT are up-to-date as per the current industry trends and are useful for carrier and pre-constructed rates.

6.12 QUESTIONS AND EXERCISES

Short-Answer Questions

1. State the role of Intermediaries in air cargo industry.
2. Write a short note on document transfer fee. Why is it necessary?
3. What are the main terms and conditions that the forwarders need to follow?
4. Enumerate the role and responsibility of Airforwarders Association.

5. Write a brief note on ICAO codes.
6. Define TACT and explain some of its important aspects.

Long-Answer Questions

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1. Discuss the evolution of freight forwarding in aviation industry. How are forwarders known differently in various countries?
2. What are the different regulatory authorities and their functions? Discuss.
3. Define ICAO and discuss its significance in air cargo.
4. What is ACAAI? Elaborate its areas of activities.
5. What is OAG? Analyse its role.
6. What is the role of customs and why is it required? Discuss.